THE

JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

[Registered as a Newspaper.]

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GAS PURIFICATION
BY
OXIDE OF IRON.

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CENTRAL DEPÔTS:
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LONDON DEPÔT:
BLACKWALL, E.;
OFFICES:
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And SPECIAL GASOMETER PAINT.
Several Prize Medals. Established over 20 Years.
These Paints are now used in over 200 Country Gas-Works, and by all the London Gas Companies, on Gas-holders, Scrubbers, Purifiers, &c. Also used by the Admiralty, War Office, Railway Companies, Founders, &c. They prevent and arrest rust, and protect iron from the action of water, sulphurous and gaseous exhalations; do not crack, blister, or flake off; will cover tar effectually.
The covering powers are considerably greater than those of any other Paint.—*See "Engineer," Nov.* 2, 1866.
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CONTRACTOR FOR
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Gas, Water, & Sanitary Purposes,
AND MANUFACTURER OF
WOOD GRIDS
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JOSEPH COWEN and CO.,
BLAYDON BURN, BLAYDON-ON-TYNE,
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J. C. and Co. have been for many years the most extensive Manufacturers of Fire-Clay Retorts and Fire-Bricks in the Kingdom. Orders for Fire-Clay Retorts of all shapes and dimensions, and to fit any shaped Mouthpiece, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works as above.
COWEN'S GARESFIELD COALS.
Jos. Cowen & Co. are the only Manufacturers of Fire-Bricks and Clay Retorts at Blaydon Burn.

JOHN RUSSELL & CO.,
LIMITED,
Established at the commencement of Gas Lighting,
Manufacturers of
TUBES AND FITTINGS.
THREE PRIZE MEDALS,
Paris, 1878.
Head London Office:
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ALMA TUBE-WORKS, WALSALL;
OLD PATENT TUBE-WORKS, WEDNESBURY.

JOHN BENT & SON,
BELL BARN ROAD, BIRMINGHAM,
Manufacturers of
WET AND DRY GAS-METERS,
Licensees and Manufacturers of
HUNTS
PATENT COMPENSATING METERS,
STREET-LAMPS, &c., &c.
Established 1830.

THOMAS PIGGOTT & CO.,
SPRING HILL, BIRMINGHAM,
Manufacturers of
TELESCOPIC & SINGLE GASHOLDERS,
CAST & WROUGHT IRON TANKS FOR DITTO,
And Gas Apparatus of every Description.
Marine, Tubular, Cornish, Plain, Furnace, Saddle, and Range Boilers.
Sugar, Saltpetre, and all kinds of Pans.
Roofs, Girders, and Bridges, and General Smith's Work.
London Offices: 97, CANNON STREET—
JAMES E. & SAMUEL SPENCER, Agents.

THE
"OTTO" GAS-ENGINE.
See Page 222.
CROSSLEY BROTHERS,
MANCHESTER AND LONDON.

THE
NITSHILL COMPANY'S
DUKE OF HAMILTON'S
LESMAHAGOW
CANNEL COAL.
AGENT:
JAMES M'KELVIE,
HAYMARKET,
EDINBURGH.

GEORGE GLOVER AND CO.,
HAVE REMOVED TO MORE EXTENSIVE PREMISES,
RANELAGH WORKS, ROYAL AVENUE, CHELSEA, LONDON, S.W.

The want of gaslight, caused by the freezing of Wet Meters, is a very general source of complaint, and it is acknowledged that all attempts to remedy the evil have proved futile.

The want of gaslight during the dark, foggy weather of mid-winter, when gas is most needful, is a source of great loss both to Gas Companies and the public. The convenience and economy of gaslight is so great, compared with any other artificial light; that there is no val d ground for believing that it can be supplanted, and, until coal becomes many times dearer than at present, it must remain the cheapest and most convenient source of light and heat. It is especially to be regretted, when Gas Companies are making every exertion to remove all just grounds of complaint, and, as far as possible, to consult the public convenience, that the annoyance caused by smo'ky and unsteady flames, or the total extinction of the lights, consequent on the freezing of wet meters, should induce the public to lend a ready ear to the fallacy of the electric light as a substitute for gas.

The destructive influence of the expansive force of water while freezing is familiarly known in the bursting of water-pipes during frost; but the injury to Wet Gas-Meters, although quite as real, being internal, is not so apparent. The internal parts of Meters which have been frozen are warped or ruptured, and they frequently receive further injury by the hasty and unskilful method of thawing them, which often melts the solder as well as the ice, unfastening the bearings or other parts of the Meter, thus admitting of gas passing unregistered. Meters, once frozen, should be thoroughly repaired, and, as soon as convenient, replaced by **properly made Dry Meters** which register correctly, and with the action of which the most intense frost does not interfere.

Of course water in Dry Meters or watches will freeze, but its accidental presence in either is very rare, and there is no excuse for its being in them. More than one parent has been startled by finding his little hopeful experimenting with his watch in the wash-hand basin, and more than one stupid person has been found pouring water into a Dry Meter. Water may also get into Dry Meters by placing them below the level of the main, and connecting the service pipe at the lower part of the main, allowing water to flow into the Meter. Another means of getting water into Dry Meters is by foolishly placing them in connection with Wet Meters, the vapour from which condenses in the Dry Meters. Some water may also find its way into Dry Meters when they have been put in the place of Wet Meters, before clearing the internal pipes and fittings from water that had been deposited in them by evaporation from the Wet Meters.

The presence of water in Dry Meters is so rare and exceptional that it is properly ignored. Water is a necessity in the Wet Meter; but is incompatible with the Dry Meter. No Gas Company or Consumer suffers loss or inconvenience from frozen water in Dry Meters; but it cannot be ignored that many Companies and thousands of Consumers have suffered, and are suffering, serious loss and inconvenience from the freezing of Wet Meters, and some few Companies are suffering from the use of so-called Self-Regulating Meters, through which all the gas can be got unregistered, by inclining the Meter forward either accidentally or with the intention to defraud—a subject deserving the serious attention of such Companies.

SILVER MEDAL, PARIS EXHIBITION, 1867.

LLOYD AND LLOYD,

ALBION TUBE-WORKS, BIRMINGHAM,

AND

COOMBS WOOD TUBE-WORKS, HALESOWEN,

MANUFACTURERS OF

WROUGHT-IRON TUBES AND FITTINGS,

AND

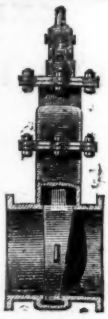
LAP-WELDED IRON AND HOMOGENEOUS METAL BOILER TUBES,

UP TO FOUR FEET IN DIAMETER.

London Offices: No. 4, Cloak Lane, Queen Street, E.C.

Warehouses: London, Liverpool, Manchester, and Lille.

C. & W. WALKERS' DOUBLE-FACED GAS-VALVES.



These solidly constructed double-faced Gas-Valves have taken the place of the old system of the light, single-faced disc, which is too uncertain and unreliable in large bores.

They are guaranteed absolutely gas-tight. They are very massive and rigid, and by improved modes of manufacture they are produced at very little excess in cost over the old light, weak system, which is liable to spring and bend, and become leaky.

The Valve is a rigid wedge of solid cast iron, having two perfectly scraped surfaced facings fitting between the two on the body, which are also surfaced.

A spring in two short halves, and, therefore, not liable to break, is used only for scraping the front facing clean.

The front facing is vertical; the back facing forms the wedge.

At a slight additional expense both flanges are faced to bolt to main-pipes.

MIDLAND IRON-WORKS,

DONNINGTON, near NEWPORT, SHROPSHIRE; 8, FINSBURY CIRCUS, LONDON.

EDWARD E. CROMBIE & CO.,

INVENTORS AND PATENTEES

OF THE

FRICTIONLESS DRY GAS-METERS,

Beg to intimate to Gas Companies and others that they are now prepared to supply these very superior Meters at the same prices as for the ordinary Gas-Meters.

In the construction of this Meter, for which the best tin plates only are used, every mechanical contrivance has been taken advantage of successfully to reduce the friction to a minimum, which is amply proved by the fact that they are made to work upon only one-fortieth of an inch pressure. By an improvement also in their construction, a steadier light is obtained, and greater capacity than can be got from any other Meter in the market. No gas can pass under the valves on any back pressure, as is the case with many other Dry Meters.

To Gas Companies supplying gas through streets with heavy gradients, these Meters are invaluable, as much gas is saved from the low pressure required to work them.

ALL METERS ARE UPHELD FOR FIVE YEARS.

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ROBT. DEMPSTER & SONS,

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ROSE MOUNT IRON-WORKS, ELLAND, YORKSHIRE.

MANUFACTURERS OF EVERY DESCRIPTION OF

GAS APPARATUS;

CONTRACTORS FOR THE

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The only Prize Medal awarded for TUBES & FITTINGS.

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CAST & WROUGHT IRON TANKS FOR DITTO;

PURIFIERS, CONDENSERS, SCRUBBERS, RETORTS, VALVES;

IMPROVED WROUGHT-IRON RETORT-LIDS, CROSS-BARS, & SCREWS;

AND GAS APPARATUS OF EVERY DESCRIPTION.

SOLE MANUFACTURERS OF LIVESEY'S PATENT GASHOLDER MAN-LID,

By use of which Man-lid, inlet and outlet pipes can be examined and cleansed without loss of gas in crown of holder, or ingress of atmospheric air.

ROOFS, GIRDERS, BRIDGES, AND BOILERS OF ALL KINDS.

Drawings, Specifications, and Estimates supplied on application.

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R. W. WALLACE & CO.,

60, MARK LANE, LONDON, E.C.,

Are Buyers of SULPHATE AMMONIA in Large or Small Quantities, or Sell on Commission for Gas Companies and Makers.

PLANT ERECTED ON THE LATEST AND MOST APPROVED PRINCIPLE.

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DANIEL HOWARD,

(Successor to the late BENJ. WHITEHOUSE),

GASHOLDER AND BOILER WORKS,

WEST BROMWICH, NEAR BIRMINGHAM (Established 1765),

MANUFACTURER OF

TELESCOPIC AND SINGLE GASHOLDERS,

WROUGHT AND CAST-IRON TANKS FOR DITTO.

PURIFIERS, CONDENSERS, SCRUBBERS, HYDRAULIC MAINS, AND ALL KINDS OF GAS APPARATUS.

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STEAM, HOT WATER, AND RANGE BOILERS, TANKS, CISTERNS, BOATS,

AND ALL KINDS OF WROUGHT-IRON WORK.

Drawings, Specifications, and Estimates supplied on application.

THE

STANDARD WASHER AND SCRUBBER.

[KIRKHAM, HULETT, AND CHANDLER'S PATENT.]

Some of the advantages claimed for this Apparatus are as follow:—

The Exposing of a large Amount of Effectually-wetted Surface (which is continually reproduced) to act upon the Gas.
Unerring Regularity in the Distribution of the Liquor.
Saving of Expense in Providing and Exchanging Scrubbing Material—none being required.
Economy of Space, thus enabling the Apparatus to be protected from the Weather.
Economy of First Cost and of Maintenance.
It works without Pressure.
It is particularly adapted for Gas-Works where Sulphate of Ammonia is manufactured.

Applications for Prices, &c., to be made to

Messrs. KIRKHAM & HERSEY, GAS ENGINEERS, 21, ABINGDON STREET, WESTMINSTER.

GAS PURIFICATION

BY

OXIDE OF IRON.

GAS PURIFICATION & CHEMICAL Co., LIMITED,

PALMERSTON BUILDINGS, OLD BROAD STREET, LONDON, E.C.

JOHN WM. O'NEILL, Managing Director.

LIVESEY'S PATENT WASHER.

This apparatus effects the most intimate contact between the liquor with which it is supplied and the gas passing through it, resulting in the complete removal of all particles of tar, increasing the ammonia strength of the scrubber and condenser liquor, and removing a large proportion of other impurities—notably, carbonic acid. The Washer is intended to work in conjunction with a scrubber. It occupies little space, and is inexpensive. It has been in successful constant use for nearly three years, does not become clogged with tar or corroded by the action of the liquor or gases, it gives three inches of pressure, and only needs a supply of liquor to keep it in regular action without any further attention.

For Particulars and Prices apply to

Messrs. DEMPSTER AND SONS, ELLAND, HALIFAX, for the North;
Messrs. BAILEY, PEGG, AND CO., Bankside, LONDON, S.E., for the South;
Messrs. WILLEY AND CO., Commercial Road, EXETER, for West of England and South Wales
Or to the PATENTEE, 589, OLD KENT ROAD, LONDON, S.E.

Now Ready, Price One Guinea,

PRECEDENTS IN PRIVATE BILL LEGISLATION

AFFECTING GAS AND WATER UNDERTAKINGS.

COMPILED BY MR. G. W. STEVENSON, C.E., F.G.S.

This Work contains information with regard to the practice of Parliament during the last fourteen years, in regard to most of the points on which differences arise in Opposed Bills for Gas and Water Undertakings, comprising—Authorized share and loan capital, Rates of dividend, Capitalization of profits, Term for the repayment of loans, Instances in which new shares are to be sold by auction and Exceptions to the Standing Order requiring new shares to be sold by auction, The limitation of back dividends, Illuminating power, Purity, Price, Notice before testing, The conditions under which the public supply of gas is regulated, Alteration of mains, Instances in which maps of mains are required, and All cases in which undertakings have been transferred, since 1845 in gas and 1865 in water, from Companies to Local Authorities.

In the Water Precedents will be found, in addition, The rates for a supply for domestic purposes, and the Rates for other than domestic purposes.

LONDON: WALTER KING, 11, BOLT COURT, FLEET STREET, E.C.

GOLDSMITH'S PATENT SIGHT WATER-LINE INDICATING GAS-METER

MANUFACTURED BY GUEST AND CHRIMES,

FOUNDRY AND GENERAL BRASS WORKS,
ROTHERHAM;
AND 85, SOUTHWARK ST., LONDON, S.E.

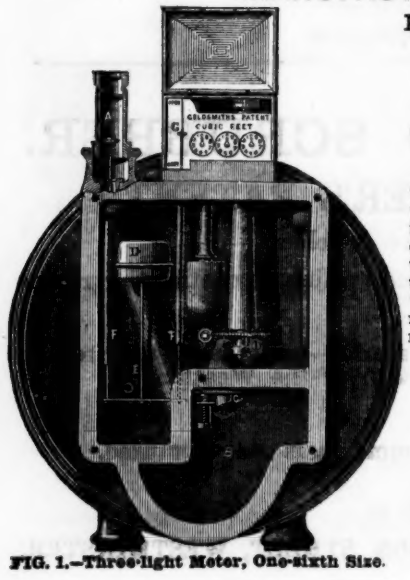

FIG. 1.—Three-light Meter, One-sixth Size.

Fig. 1 is a Meter with front removed to show the arrangement and connection of the Indicator and Valve.

Fig. 2 is front view of Index, with cover up.

The principal object of this invention is to render the water-line in the reservoir at all times visible. It will be seen, by reference to the illustrations, that this is accomplished in the following manner:—On the dial are the words "Open" and "Shut," and attached to the float is the pointer G, which rises and falls with the water-line in the reservoir. If the pointer is at "Open," it shows that the valve is open, and that the reservoir is full. If it is at "Shut," it shows that the reservoir is empty, and that the gas will be shut off.

The following ADVANTAGES will be obvious:—

1. The Inspector can see at a glance if the Meter requires water.
2. No more water than is required need be added, and therefore no water has to run out.
3. The Meter Inspector will be spared a great deal of his most objectionable work, and he will save a great deal of time and trouble.
4. The consumer will not always have to be asked for water, nor will he have to endure the unpleasant smell caused by waste water being run out.

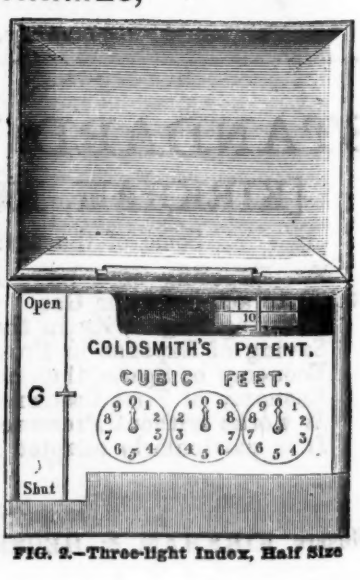

FIG. 2.—Three-light Index, Half Size

GEORGE ORME & CO.,

ATLAS METER-WORKS, OLDHAM,

MANUFACTURERS OF

WET AND DRY GAS-METERS,

STATION-METERS, GOVERNORS,

PRESSURE AND EXHAUST REGISTERS,

LAMP-METERS IN CAST-IRON BOXES,

And every Description of Gas Apparatus.

J. T. B. PORTER & CO.,

GAS ENGINEERS & MANUFACTURERS,

IRONFOUNDERS AND CONTRACTORS,

GOWTS BRIDGE WORKS,

LINCOLN.

LONDON OFFICES: 1, WESTMINSTER CHAMBERS, S.W.

ESTIMATES FOR GAS-WORKS OF ANY SIZE.

REFERENCES TO 500 WORKS ALREADY ERECTED.

N.B.—All Communications to be addressed to the FIRM ONLY.

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GAS ENGINEERS,

GLOBE METER-WORKS, OLDHAM,

MANUFACTURERS OF

WET & DRY CONSUMERS GAS-METERS,

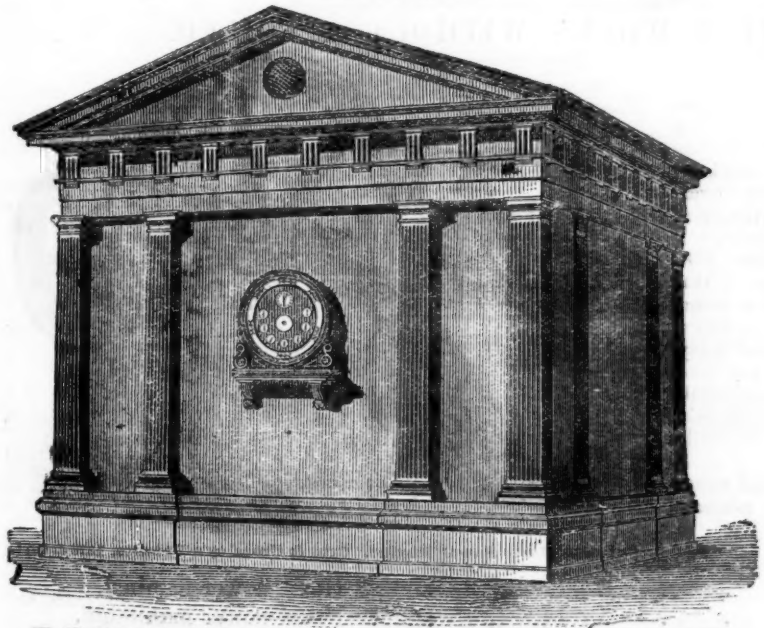
OF THE HIGHEST EXCELLENCE ONLY;

ALSO LICENSEES AND MANUFACTURERS OF

WARNER & COWAN'S PATENT SELF-REGULATING GAS-METERS;

ROUND STATION-METERS,

ON CAST-IRON STANDS.



SQUARE STATION-METERS,

WITH PLANED JOINTS.

GOVERNORS, GAUGES, INDICATORS, MAIN COCKS, &c.

GAS COOKING APPARATUS.

Home and Foreign Orders promptly attended to.

All Sizes of CONSUMERS METERS, STATION-METERS, and GOVERNORS generally in Stock.

Orders almost invariably despatched on the day of receipt.

TERMS, &c. ON APPLICATION.

C. & W. WALKER'S

WOOD PURIFIER SIEVES,

Which have now been used for fifteen years, and their advantages and durability fully established. They are made entirely by steam machinery in very large quantities at the most moderate cost.

MIDLAND IRON-WORKS,
DONNINGTON, NEAR NEWPORT, SHROPSHIRE.
FINSBURY CIRCUS, LONDON.

ESTABLISHED IN 1860.

BENJAMIN CARPENTER,

THE ORIGINAL MANUFACTURER OF THE IMPROVED

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FOR

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FIRE CLAY and BRICK WORKS,

STOURBRIDGE.

Proprietors of
BEST GLASS-HOUSE POT and CRUCIBLE CLAY.
Manufacturers for Home and Export.
GAS-RETORTS, GLASS-HOUSE FURNACE,
BLAST-FURNACE, TANK BRICKS, LUMPS, TILES,
And Every Description of Best Fire-Bricks.

JOHN ROMANS, C.E., F.G.S.E.,

CONSULTING GAS ENGINEER

AND

CANNEL COAL FACTOR,

30, St. Andrew Square, EDINBURGH.

Plans and Estimates furnished; Gas-Works, Apparatus, Pipes, Machinery, Fire Goods, &c., supplied, or Attested and Shipped for Exportation.

GAS-WORKS TAKEN ON LEASE.

Mr. ROMANS has for upwards of 30 years been practically engaged in the Manufacture of Gas, and has, by extensive experiments, ascertained that by JUDICIOUS INTERMIXTURE of the lighter with the heavier gases, much of the rich Hydrocarbons CAN BE SAVED, which otherwise ARE LOST, during the process of manufacture. He is therefore enabled to give advice to those who favour him with their orders for Cannel, as to the class which will secure for their standard of illuminating power the HIGHEST ADVANTAGEOUS RESULTS.

ANALYSIS AND PRICES FORWARDED ON APPLICATION.

GRIRDROD'S PATENT

PORTABLE PIPE SCREWING

MACHINE,

For 1 in., 1¼ in., 1½ in., and 2 in. Gas Threads, complete £7 10s.

In use at the chief gas-works, and giving great satisfaction.

For other useful goods, see Bailey's "Illustrated Inventions," post free 3s. 6d.; gratis to ledger customers.

W. H. BAILEY & CO.,

Brassfounders, Gauge Injector and Tool Makers,

ALBION WORKS, SALFORD,

LANCASHIRE.

Gold Medal Awarded, Paris Exhibition, 1878.

THOMAS TURTON AND SONS,

SHEAF AND SPRING WORKS,

SHEFFIELD,

MANUFACTURERS OF

FILES OF BEST QUALITY

FOR ENGINEERS,

STEEL OF ALL DESCRIPTIONS,

SCREW STOCKS, TAPS, AND DIES, SPANNERS

RATCHET BRACES, LIFTING-JACKS,

ANVILS, VICES,

AND ENGINEERS TOOLS GENERALLY.

LONDON OFFICE:

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R. W. WINFIELD AND CO.,

CAMBRIDGE STREET WORKS AND ROLLING MILLS,

BIRMINGHAM.

The following Medals have been awarded:—

GRAND COUNCIL MEDAL, LONDON, 1851. MEDAL, LONDON, 1862. GOLD MEDAL, PARIS, 1867,

The only Gold Medal awarded for "Apparatus and Processes for Heating and Lighting" by the Imperial Commissioners

MEDAL FOR PROGRESS, VIENNA, 1873.

The following Medals were also awarded at Paris, 1878:—

GOLD MEDAL for Chandeliers and Gas-Fittings.

GOLD MEDAL (Rappel) for Metallic Bedsteads and Furniture.

GOLD MEDAL (Rappel) for Art Metal Work. BRONZE MEDAL for Tube Metal and Wire.

MANUFACTURERS OF BRASS AND COPPER SHEETS,

TUBE AND WIRE,

ROLLED METALS, LOCOMOTIVE AND CONDENSER TUBES, CYLINDERS;

Ornamental, Taper, and Cased Tubes; Tin Tubes;

GAS-FITTINGS, CHANDELIERS,

BRACKETS FOR HEATING AND LIGHTING;

METALLIC BEDSTEADS.

Ecclesiastical and Mediæval Metal Workers.

GENERAL BRASSFOUNDERS.

REGISTERED TRADE MARK:

R. W. W. & CO.

LONDON OFFICES & SHOW-ROOMS: 141, FLEET STREET, E.C.

THE

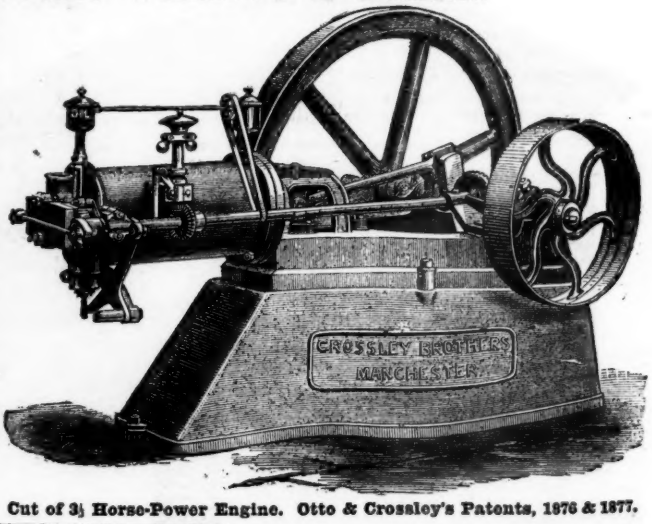
New "OTTO" Silent Gas-Engine.

AN ENGINE WHICH WORKS WITHOUT A BOILER.

The principle of combustion in this Gas-Engine is ENTIRELY NEW. In it an explosion does not take place in the ordinary meaning of the term. A small part only of the charge is combustible, which on ignition serves to expand the remainder, thus avoiding shock and effecting great economy. The Engine is also alone in the peculiarity of igniting its charge at the *beginning* of the stroke, leaving the whole of the stroke for effecting expansion of the gases, instead of merely a fraction as in obsolete constructions.

This Engine has a SMALLER NUMBER of MOVING PARTS than any other Gas-Engine; or, indeed, than many steam-engines. It is almost as silent as a steam-engine, works with the same smoothness and regularity of speed, and has the immense additional advantages of always being ready to start at full power at once on the gas being lighted; and, by dispensing with the boiler, of avoiding the danger of explosion, increased rates for insurance, expensive attendance, and all the annoyance which the use of a boiler entails.

Where work is intermittent, trouble with a small steam-engine and boiler is at its maximum, but at its minimum with a Gas-Engine.



Cut of 3½ Horse-Power Engine. Otto & Crossley's Patents, 1876 & 1877.

Sizes at present offered . . . . 1, 2, 3½, and 8 Horse-power nominal.
Being equal to about . . . . 1½, 2½, 4, and 12 Horse-power maximum.

Cost of Gas, One Penny per hour per indicated Horse-power, at 4s. per 1000 cubic feet.

PRICES, LIST OF USERS, AND BOOK OF SEVENTY TESTIMONIALS, ETC., ON APPLICATION TO

CROSSLEY BROTHERS,

WORKS: GREAT MARLBOROUGH STREET, MANCHESTER

LONDON WAREHOUSE: 116, QUEEN VICTORIA STREET, E.C.

SOLE ENGLISH AND COLONIAL MAKERS.

TANGYE BROTHERS AND HOLMAN,

CORNWALL HOUSE, 35, QUEEN VICTORIA STREET, LONDON, E.C.,

(LATE OF 10, LAURENCE POUNTNEY LANE.)

SOLE MAKERS OF MORTON'S PATENT SELF-SEALING RETORT-LIDS,

WITH HOLMAN'S PATENT ECCENTRIC FASTENINGS,

Anti-Friction Catches, and New Self-Adjusting Cross-Bars.

Instantaneous Sealing effected. No Luting. No Duplicate Lids required.

Holman's New Self-Sustaining Cross-Bar ensures freedom of Joint, and maintains parallel position of the Lids.

Since their introduction in 1869, these Patent Retort-Lids have been thoroughly tested, being now in use in nearly all the principal Gas-Works in London and the Provinces.

T. B. and H. are now making the "Morton's Self-Sealing Lid" of the SAME FORM OR SECTION AS THE RETORT (see Illustrations above), as well as bringing the Mouthpiece from the D or Oval at back to Circular in front, as heretofore.

D and Oval Morton's Lids are working satisfactorily both in this country, on the Continent, and in the United States of America. Among others they have been adopted by the following Gas-Works:—

The Gaslight Company's Works, Fulham; Ditto, Bromley-by-Bow; Ditto, King's Cross; Ditto, Shoreditch.
And also in the Gas-Works at Richmond, Maidstone, Gloucester, Glasgow, Portsea, Roubaix (France), The Hague (Holland

HUNT'S PATENT EQUILIBRIUM GAS-GOVERNOR.

In this Governor a Throttle-Valve is substituted for the ordinary suspended Cone, all external communications being avoided by placing the Lever or Radius Arm (shown in the drawing) inside the Valve-Chamber upon the Disc. The Disc is carried upon steel centres, upon which it is accurately balanced and turns freely. The friction in working is thereby reduced to a minimum. This Governor is extremely sensitive to alterations of inlet or outlet pressure, and renders a large actuating holder unnecessary.

The principal advantages of this arrangement over the ordinary form of Governor are as follows:—

Its sensitive action prevents oscillation.

It is self-adjusting—*i.e.*, it maintains a steady pressure under variations of inlet pressure or a fluctuating consumption.

The inlet to Gasholder being contracted to the smallest possible dimensions, all danger from leakage through insufficiency of seal, tilting, &c., is entirely avoided.

The valve portion being separate from the holder, it can be handled and fixed like an ordinary Slide-Valve direct in the main; and the holder can be placed at an convenient distance immediately above it. The cost is thus materially reduced, and the inconvenience of heavy lifts done away with.

There are no working parts likely to get out of order.

These Governors have been adopted by many leading Gas Companies, among whom are the following:—

The Gaslight and Coke Co. (9), The London Gas Co. (3), and at Abergavenny, Arundel, Birmingham, Cannes (France), Devonport, Dursley, Exeter, Guernsey, Halesowen, Mentone (France), Monmouth, Newcastle-on-Tyne, Oxford, Plymouth, Rochdale, Windsor, &c.

TESTIMONIAL.

The Gaslight and Coke Company,
9, Water Street, New Bridge Street,
Blackfriars, E.C., Feb. 27, 1875.

MESSRS. TANGYE BROTHERS AND HOLMAN.

Gentlemen,—The two 24-inch and three 36-inch Hunt's Equilibrium Governors supplied by you, and fixed in the valve-rooms at Whitechapel, Goswell Road, and Blackfriars, are working very satisfactorily.

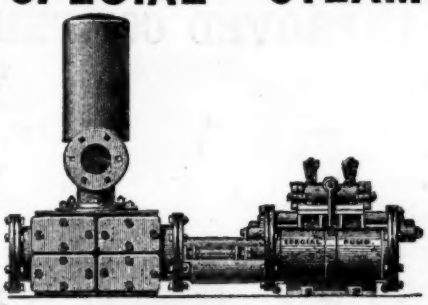
Yours truly,

(Signed) JOHN JOHNSON.

PRICES AND FULL PARTICULARS ON APPLICATION.

THE "SPECIAL" STEAM-PUMP.

Diameter of Steam Cylinder.	Diameter of Water Cylinder.	Length of Stroke.	Gallons of Water per Hour, Approximate.	Reduced Prices.
3	1½	9	450	£16
4	2	9	815	18
5*	2½	12	1,250*	20
5*	3	12	1,830*	22 10
4	4	12	3,250	25
6*	4	12	3,250*	30
5	5	12	5,070	32 10
7*	5	12	5,070*	40
6	6	12	7,330	40
8*	6	12	7,330*	50
7	7	12	9,750	50
10*	7	12	9,750*	65



In use in a Hundred Gas-Works in the United Kingdom for Pumping Ammoniacal Liquor, Water, or Tar.

Messrs. Burt, Boulton, and Haywood, Manufacturing Chemists, have over FORTY "Special" Steam-Pumps in use at their several large Tar-Works.

Two Hundred Sizes made. Those in Table opposite are the leading Sizes for use in Gas-Works and Chemical Works.

* These Sizes being usually selected for pumping Tar and Liquor, are always in stock, or nearly ready, fitted with all pump details in iron, and extra length distance-piece between steam and pump cylinder, at a small extra cost.

TANGYE'S HIGH-PRESSURE AND CONDENSING STEAM-ENGINES; CORNISH, VERTICAL, & TUBULAR BOILERS; HYDRAULIC AND SCREW LIFTING-JACKS, CRABS, PULLEY-BLOCKS, &c.

FULL PARTICULARS, ESTIMATES, CATALOGUES, ETC., ON APPLICATION.

London, 1851 New York. 1853. Paris, 1855. London. 1862.

Dublin, 1865.

The SIX MEDALS AWARDED to THOMAS GLOVER for

PATENT DRY GAS-METERS,

The latter being the Highest Medal awarded for Dry Gas-Meters by the Imperial Commissioners for the Universal Exhibition, Paris, 1867.

Paris, 1867.

THOMAS GLOVER & CO.,

DRY GAS-METER MANUFACTURERS,

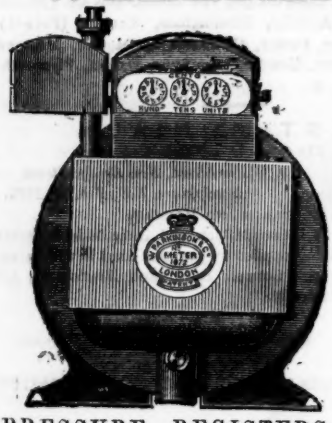
214 TO 222, ST. JOHN STREET, CLERKENWELL GREEN,

LONDON, E.C.

THOMAS GLOVER & CO.'S PATENT DRY GAS-METERS

1st, Are a remedy for all the defects of Wet Meters;
2nd, Are suitable for all climates, whether hot or cold;
3rd, Incur no loss of Gas by evaporation;
4th, Cannot become fixed by frost, however severe;
5th, Are the most accurate and unvarying measurers of Gas;
6th, Prevent jumping or unexpected extinction of the Lights;
7th, May be fixed either above or below the level of the Lights;
8th, Cannot be tampered with, without visibly damaging the outer case;
9th, Will last much longer than Wet Meters;
10th, Will not cost more than one-half for repair that Wet or Water Meters do;
Are upheld for five years without charge.

WILLIAM PARKINSON AND CO.,



(ESTABLISHED 1816,)

MANUFACTURERS OF

WET & DRY METERS,

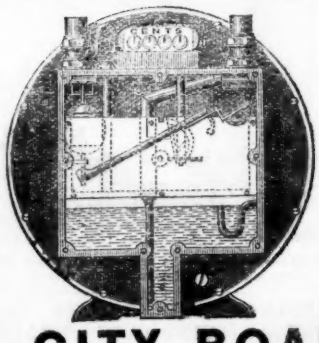
STATION-METERS & GOVERNORS,

EXHAUSTER REGULATORS,

PRESSURE REGISTERS, EXPERIMENTAL APPARATUS, GAUGES, WATER-METERS, &c.

HUNT'S PATENT IMPROVED COMPENSATING METER.

In this Meter, the action of the measuring-drum is reversed. By this arrangement an improvement is effected in the registration at high speeds, which, in many tests, has not varied from the smallest light to three times the capacity of the meter. It works equally well under all pressures. The range of error between the high and low line is much smaller than that allowed by the "Sale of Gas Act."



The Meter has been critically tested, and most favourably reported upon by official Meter Inspectors in London and Birmingham.

W. PARKINSON and CO. have made arrangements for the manufacture of these Meters, both in tin and cast-iron cases, and for the alteration of old ones to this principle, which is confidently recommended as possessing every quality that can be desired by Gas Companies, Corporations, or Private Consumers.

COTTAGE LANE, CITY ROAD, LONDON, E.C.

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TO CORRESPONDENTS.

G. A.—*Communication received. The tracing is in the engraver's hands.*

W. C.—*Your processes will be noticed in the proper place in the "Treatise."*

H. T.—*On reading your letter over we find it is not suitable for our columns.*

A Young Gas Manager.—*A filtration of the liquid through oxide of iron would remove the sulphuretted hydrogen, and, at the same time, intercept the oily particles. It might be necessary, however, to carefully re-distil the liquor with a little fresh lime, in order to get it into a pure state.*

B. G.—*Received.*

In consequence of press of matter, many reports which should have appeared in to-day's number, are obliged to be held over till next week.

No notice can be taken of anonymous communications. Whatever is intended for insertion, must be authenticated by the name and address of the writer; not necessarily for publication, but as a guarantee of good faith.

THE JOURNAL OF GAS LIGHTING,

WATER SUPPLY, & SANITARY IMPROVEMENT.

TUESDAY, FEBRUARY 18, 1879.

Circular to Gas Companies.

It is astonishing that an invention in so crude a state of development as is the electric light at present, should have taken so firm a hold—we will not say of the public mind—but of the minds of those who ought to be best able to judge of its capabilities and chances of ultimate success. It is, however, well perhaps to be on the safe side, and, therefore, we do not blame the Gas Companies and Corporations who are seeking for power to supply the light. Such power is not likely to be of much use to them, for Parliament is certain not to give a monopoly of the light in any district, and it would be of doubtful policy for a Company to spend a considerable amount of capital in the purchase of apparatus which might never be asked for, or which, tried for a time, would most likely be soon thrown on their hands again. It is hardly necessary, perhaps, but we may caution the smaller Companies against being led, by one or two applications, to rush into an expenditure of capital, which, according to all appearances, can never prove to be remunerative. As regards the large Corporations, we may say that the manufacturers within their districts who may desire to have the light, are rich enough to purchase apparatus for themselves, and so save the cost of hire. While not deprecating, then, the applications for power to furnish the electric light which are made in every Gas and Improvement Bill before Parliament this Session, we do not expect that the power, if granted, as it probably will be, will prove of the smallest benefit, either to Gas Companies or Corporations.

A newspaper paragraph informs us that all the public lighting in San Francisco is to be done by electricity. Expense is of no consequence in the Golden City; but there are other objections than the cost, which might be brought against the general adoption of the electric light for street illumination. The thoroughfares of a large district of San Francisco suddenly plunged in darkness would create some consternation, and make the wayfarers feel for their six-shooters. Very likely, however, the story is only a piece of newspaper *blague*, emanating, perhaps, from the same source as the telegram sent to London, which originated the "scare." This time their efforts may be directed towards depreciating the value of American gas property.

The ordinary half-yearly meeting of The Gaslight and Coke Company was held on Friday last, and passed off, as might be expected, at the announcement of an extra half per cent. dividend, with much *éclat*. The Governor, in his opening speech, lamented the absence from the meeting of some silly Proprietors who were foolish enough to part with their holdings during the scare, and now, doubtless, bitterly repent their folly. The great prosperity of the Company, and the rapid strides it makes, are naturally regarded by the Governor with much satisfaction. The increase of consumption must necessarily continue, and the energies of both Directors and Managers will be severely taxed to keep pace with the ever-advancing demands. We do not anticipate, with Mr. G. Livesey, that in the course of another two years the Company may be able so far to reduce the price of gas as to entitle them to a twelve per cent. dividend; but we do think that, if progress continue at its present rate, the Directors will be justified in taking off from the price of gas at least another 2d. per thousand in the course of the next half year, and this will lead them some steps towards Mr. Livesey's goal. The Governor has been very much disappointed with the revenue derived from the sales of coke and tar. Mr. Livesey's statement that the prices of coal and coke are now just about what they were seven years ago, is reassuring, but scarcely meets the case. Stocks of coke accumulate, and come, in time, to constitute what may be regarded as a nuisance. It is only a revival of manufacturing industry that can clear off the accumulations. As for tar, we anticipate that it will soon increase in value; but, as the Company are now about to work up all their residuals, what they will get for tar need not be speculated upon; for the profits they will make on its derivatives will, we expect, be large, if the works be conducted with skill. We would, once more, press on the attention of the Directors the advisability of manufacturing artificial fuel with breeze and residual pitch. The Paris Gas Company, who are badly circumstanced for the sale of such an article, obtain considerable profits from it. The Chartered Gas Company, at Beckton, are in a position to supply a large number of steamships, and we might predict a considerable sale for this product. One thing gratifies us very much, and that is the announcement that the idea of further amalgamations is not abandoned. We have been told several times lately that further negotiations were in progress, and even the date at which the unions were to take place; but we paid little heed to the information. The statement of the Governor lends confirmation to the reports which have reached us. As a matter of course, the Governor could not pass over the electric light, to which he has given a considerable amount of attention. He has followed the invention from Paris—where, if in any city, it ought to have proved a success, but has not—to this Metropolis, where it has certainly proved a failure. The reports of the Chief Inspector of the Chartered Company, which are quoted in the Governor's speech, detail, no doubt with accuracy, the numerous defects, in consequence of the liability of the light to sudden extinctions, and its want of diffusiveness and penetrative power. In foggy weather, we are told, it is of no advantage to the wayfarer, a few gas lights giving more illumination than is distributed by the most powerful electric light. The Holborn Viaduct experiment will, we are told on good authority, be discontinued in a few days. Its cost has been relatively enormous. We cannot at present give the figures which have been confided to us, but when the Engineer's report is presented to the Corporation, we think the electric light will disappear as a public illuminatn, though shopkeepers and others, who employ the light

as an advertisement, will, perhaps, continue its use, regardless of expense. As the Governor referred to it, we may notice here the experiment made last Thursday at the Albert Hall. A daily paper, which, from ignorance or malice, is the bitter enemy of Gas Companies, reported it as an undoubted success; but such is not the opinion of several visitors with whom we have spoken on the matter. They one and all report the effect as most disagreeable; and when an individual rose in the body of the hall and called for three cheers for the light, the response was hissings and hootings. The *claqueur* utterly failed, for only a few other individuals joined in his cheer. The Shareholders of the Chartered Company, of course, readily acquiesced in the promotion of the Bill which has been presented to Parliament, and which will, we expect, bring large profits when its provisions are fully carried out. The last thing which remains to be noticed is the issue of new capital, which will soon be urgently needed. We do not like the auction clauses, which, we consider, do an injustice to Shareholders, but there is some justification for them. We shall look with some curiosity to the amount the shares will fetch, and shall not be surprised, now that confidence in the stability of gas property is firmly re-established in the public mind, if they bring fancy prices. In conclusion, we may say that the Shareholders of the Chartered Company have never before met under such gratifying circumstances as on Friday last, and it may be confidently expected that at the next half-yearly meeting even a more satisfactory state of things may be revealed.

The Vestry of St. Pancras, being desirous of ascertaining the opinions of the several Local Authorities in the Metropolis as to the arrangements for testing the gas supplied, have issued a circular to the other Vestries, and to the District Boards, requesting their views on the matter. St. Pancras was one of the few Vestries who availed themselves of the power granted by the Metropolis Gas Act, 1860, to set up a testing-place, and appoint an Examiner. As to how the work was done, we have no knowledge; but we do not remember that any prosecution on the report of the Local Examiner was ever instituted. We are therefore justified in assuming that all went on satisfactorily. When the Imperial Gas Company's Act, 1869, was passed, the St. Pancras Examiner was virtually superseded—the duty of testing the gas being delegated to the Metropolitan Board of Works, who alone can institute a prosecution, based on the report of their own Examiner. The St. Pancras Vestry have retained the services of an Examiner, whose reports, as we have been told, have recently come into collision with those of the Examiner for the Metropolitan Board. The Parish Tester reports the gas as for the most part below, and sometimes very much below the standard of sixteen candles; while the Board's Examiner reports the same gas as always above, and sometimes considerably above the standard. The Parish Tester's results appear to be confirmed by the independent testimonies of several experts who have been engaged by the Vestry, and no explanation of the discrepancy is apparent. In our experience, the results obtained by different operators, testing the same gas with the same apparatus, vary to but a small extent, and if, as it is alleged, the St. Pancras apparatus is in excellent order, the results obtained at the two stations by competent Examiners ought not to differ much.

We confess that we are not greatly in love with the present gas-testing arrangements, and will retract an opinion we once expressed in favour of the change which leaves the Examiner to make his tests at any hour he pleases. It is obvious that if he makes the three examinations in a couple of hours he fulfils his legal duties; but it must be admitted that in this way we obtain a very imperfect idea of the quality of the gas during the twenty-four hours. When the change was effected, the Metropolitan Board had the power to make regulations for their own officers, but they never issued any. The Board have, in fact, reduced gas-testing to a farce. But what can the Vestries and District Boards do to mend the matter? If they had all availed themselves of the provisions of the Act of 1860, the testing clauses of the Acts of 1868–69 would possibly never have been heard of. The duty of testing the gas might have still remained in their hands, and that of the Referees have been confined to prescribing the apparatus to be employed, and the amount of impurities to be allowed. Now, we believe that the Vestries and District Boards are powerless to effect any alteration in the arrangements, except through the Metropolitan Board, who regard the whole matter with sublime indifference.

We very much fear that a severe parliamentary contest will take place over the Bill of the Newcastle and Gateshead Gas Company. Notwithstanding the undoubted liberality of the Company in their charges for public lighting—and even to private consumers, as is evidenced by the reductions made—the Town Council have unanimously resolved to oppose the measure. To our mind, it is perfectly free from objections. Liberality is shown to every one but the Shareholders, who are screwed down in all directions. We fervently hope that investors will not rush madly to compete for the shares when they are offered. The interest now received by the Shareholders, who bought at a premium, is small enough, in all conscience.

The Alliance and Dublin Gas Consumers Company have held a special meeting to sanction the promotion of their Bill, which is now before Parliament. We have previously noticed the Bill, but we overlooked one point of some importance. At present, gas-meters are tested for their measuring capacity only. The Gas Company now propose to extend the power of the meter tester so that he may examine the registering apparatus. It is but seldom that defects in this part of the meter are found, but our highest authorities have for years been recommending that this, as well as the measuring portion of the instrument, should be made the subject for examination. We do not see that the Corporation of Dublin offer any opposition to the construction of the tramways which the Company urgently require, but it is not yet too late for them to show their teeth. No other part of the Bill is likely to encounter any opposition.

The Gas Committee of the Town Council of Rochdale have hit upon a happy expedient for encouraging the consumption of gas. They have agreed to allow a builder twenty-five per cent. on the cost of the gas-stoves which he engages to put into all the houses he builds. The experiment has begun with a row of some two dozen cottages now ready for habitation, and we shall be surprised if the occupiers do not soon learn the advantages and economy of these stoves. The benefits to the Corporation will, of course, be most appreciated in the summer-time, at which period of the year it is highly important that the consumption of gas should be increased in Rochdale. We read that during the summer months the Corporation Gas-Works are carried on at a loss of from £150 to £200 per week. This is not as it should be, and we are glad to learn that the Gas Committee are taking steps which may possibly soon convert the loss into a profit.

A town's meeting has been held at Stratford-upon-Avon, to protest against what they call the "sliding scale" of charges now imposed. They mean the differential rates according to locality and consumption, and they ask for one uniform rate of charge less than the lowest which is proposed by the Local Board of Health. A resolution was unanimously adopted to urge this matter on the attention of the Local Board.

Notice was last week given in the *London Gazette* that the Board of Trade have consented to legalize the cental of 100 lbs. as a weight which may be used in all dealings in which goods are sold by weight. We are afraid that much confusion will arise from this, and earnestly hope that Gas Companies and coke dealers who sell by weight will not hastily adopt the cental. In all alterations of coinage or standard measures, it is the poor who suffer most, and we should not like to see them going for a hundredweight of coke and getting 100 instead of 112 lbs.

The first annual meeting of the Midland Association of Gas Managers was held at Birmingham on the 6th inst., under the presidency of Mr. Charles Hunt, who delivered on the occasion a most interesting, and, we may say eloquent Address. It is very gratifying to find that the Association has taken such firm root among the Midland Gas Managers, and from such a body of men we shall expect to receive valuable communications. Mr. Hunt began his Address by giving some reminiscences of the visit of the British Association of Gas Managers to Paris last summer. This part of the speech cannot be condensed, and we may direct our readers earnest attention to Mr. Hunt's excellent comparative study of the modes of carbonization employed in England and France, and also in Germany. It is satisfactory to know that, after his careful review, he returned home perfectly convinced that our system is as good as any other in use. We confess we should like to see regenerative furnaces, like those Mr. Hunt saw in Cologne, in use in this country, for we are certain they would result in economy, as well as conduce to keeping the retorts at a more even temperature. Mr. Hunt is perfectly right in speaking with pride of the Birmingham Exhibition of Gas Apparatus, held in June of last year; but we are sorry to find that he is not altogether satisfied with the results, to the manufacturer, of the use of gas for other than lighting purposes. He shows clearly enough that, for such purposes, its employment has done nothing to equalize the summer and winter consumption—nay, has perhaps exaggerated the difference—and he seems to look with almost dismay on the more extended use of gas for heating purposes in winter, the increased amount of manufacturing capacity required to supply the winter demand, leaving the larger proportion of plant idle in summer. We hope

this will, to a certain extent, right itself. The result is not what we anticipated; but, on full consideration, we see that it is quite natural. Mr. Hunt concludes his Address with a reference to the electric light and the recent "scare." He, like ourselves, has no fear of any successful competition of the electric light with gas; and he earnestly recommends his brother managers to stick to the old ship, and endeavour to stop the leaks which he shows to exist. Mr. Hunt was heartily thanked for his Address, which, we are glad to see, is to be printed and circulated.

On Saturday evening last the Albo-Carbon Company lighted for the first time the Eastern Annexe of the Royal Aquarium, Westminster, with their new light. Our readers have already been informed of the nature of the invention, which consists in enriching gas by means of pure naphthaline. The apparatus for effecting this is of a very simple character. A globular vessel is packed with sticks of naphthaline. From one side of the globe a piece of metal projects over the burner, and becoming heated by the flame, conveys to the interior of the globe so much heat as to melt and slowly vaporize the naphthaline. The gas passing in from below saturates itself with the vapour of the naphthaline, and goes on to the burner. Our readers will easily understand that gas so enriched must have a very high illuminating power. As a matter of fact, at the Aquarium, two hundred gas-jets, each consuming three feet per hour of ordinary gas, before naphthalization, replaced five hundred lights, and the former gave twice the illumination afforded by the latter. Some will think that the diminished consumption of gas that might take place, if the invention came into extensive use, would be detrimental to the interests of Gas Companies. We do not think so; for we believe that an extensive use of naphthaline would soon increase the value of the tar. As to the cost of the new light, we have, as yet, no authentic information. We shall probably have to return to this part of the subject next week.

Water and Sanitary Notes.

The Water Committee of Stockton and Middlesbrough have fallen out with the large ironmasters of their district. According to the Stockton and Middlesbrough Water Act, the Corporations have only power to charge large consumers twopence per thousand gallons; but they have taken it into their heads that, by some imaginary power, they may charge an extra penny, and this extra charge the ironmasters stoutly resist. Great complaints are also made of a waste of water in the district, and the Secretary of the Joint Board, of all men in the world, has undertaken to remedy the mischief. He is apparently about to adopt Mr. Deacon's system in a small district to begin with; so perhaps a Secretary may turn out useful in some other capacity than that of quill-driver.

The Proprietors of the Weardale and Shildon District Water-Works Company have given their consent to the promotion of a Bill, which, among other things, is to authorize them to swallow up the Durham Water Company. The fat kine are about to eat up the lean. The Durham Company's undertaking was carried on without enterprise, and without regard to public opinion. The source of their water was constantly objected to, and they made no effort to secure a better supply. Few persons in Durham, therefore, will regret their disappearance. The Company will, no doubt, get a fair price for their undertaking, and Durham will soon rejoice in an ample supply of wholesome water.

The several Local Authorities whose districts are included in the Thames Valley main drainage scheme are, as yet, by no means satisfied that Lieut.-Col. Haywood's plan is the best that could be devised. They object to the proposed site for the sewage farm at East Molesey, and Kingston loudly protests against having the main sewer taken through its streets. Opposition in Parliament, however, is but little mentioned, and probably the Bill of the Joint Board will have an easy passage. It is curious to notice how much matter, of the greatest interest, is left out of the question by the Local Authorities. It is not, to our mind, the suitability of the site that constitutes the most important question. A part, it is admitted, is suitable, and, for the rest, a little engineering work will soon render it fit. If, instead of raising objections, these parish agitators would point out a more suitable site, and one which would involve less nuisance, they would be doing some service; but, as simple obstructives, they do not in the least help their own cause. Whether Lieut.-Col. Haywood's scheme be carried out or not, something will have to be done, and that something must be quickly determined upon. A few members of the Kingston Town Council pretend to be anxious to obtain the opinion of an eminent Engineer like Sir John Hawkshaw; but they evidently shrink from incurring the unavoidable expense. As the matter will be well sifted in Parliament, it may not be necessary, at the present moment, to indulge in the luxury of expert evidence, which will, however, presently be wanted.

Mr. F. J. Nelson has attempted to render great service to the district in question by showing the necessity of having separate systems of drainage for the rainfall and sewage. If a sewage farm is to be effectually worked, this separation is an absolute necessity; for sewage so diluted as would be produced by the mixture of the rainfall and sewage proper, would not be practically worth anything for manurial purposes. In a speech which Mr. Nelson delivered a short time since at a meeting of the Hampton Wick Local Board, and which he has now published in pamphlet form, he tells us what would be the approximate cost of pumping the rainfall up to the proposed farm, but he has omitted to say what might be the cost of lifting the sewage proper alone. If this were known, as near as could be ascertained by calculation, it might satisfy many wavering minds. Mr. Nelson proposes that the existing sewers—all of which, no doubt, communicate with the river—should be used as carriers of the rainfall, and that an entirely new system should be constructed to convey domestic sewage. We cannot help thinking that this would prove a cheap and an efficacious plan of dealing with an undoubted difficulty. It would relieve the filtering-grounds of much work which they ought not to be called upon to do, and, at the same time, would give to the farm a larger amount of manure in a more concentrated form. In a more recent speech, Mr. Nelson quotes the maxim of our old friend, Mr. F. O. Ward: "The rainfall to the rivers, the sewage to the "soil." In these pithy words, the whole secret of dealing with sewage and rainfall is disclosed. We may just mention here, that we once visited a sewage farm on to which not only the sewage of a large town and the rainfall of a large district were poured, but this was diluted by an enormous soakage of subsoil water into a leaky drain. The result may be easily guessed. The farm was a thing of patches. On the upper part, a tolerable crop of rye-grass was grown, and here and there patches of roots were seen; while below, at the lowest portion of the farm, nothing whatever could be grown.

The Town Council of Reading are contemplating extensive additions to their sewage farm, for the accommodation of live stock. We notice that one proposal is to erect wooden buildings with galvanized iron roofs, which would, of course, be cheaper than brick buildings, also estimated for; but there is one great objection, in our mind, to wooden buildings. Wood holds infectious matter with great pertinacity, and should cattle disease break out in the building, no amount of lime washing and carbolic acid would render it safe for months. We strongly recommend the Town Council to avoid the use of wood as much as possible, and erect brick buildings. The amount of stock now kept on the Reading farm is so large, that we shall be glad to see the next annual accounts, in order to know how the farm prospers.

National Water Supply.—The Council of the Society of Arts have determined to offer the gold medal of the Society, and three silver medals, for the best suggestions, founded upon evidence already published, for dividing England and Wales into watershed districts, for the supply of pure water to the towns and villages in each district. The suggestions must be sent in to the Society's office, on or before the 26th of April, so as to be discussed at the Conference on Health, in May. The details of the conditions will be issued immediately, and may be had, when ready, on application to the Secretary of the Society.

The Water Supply of South Stockton.—A meeting of the South Stockton Local Board of Health was held on Friday, the 7th inst., to consider the Board's position in regard to the Stockton and Middlesbrough Corporations Joint Water Committee. A report, prepared by Mr. Dodds, M.P., Clerk to the Board, was presented. This pointed out all the steps taken by the Board to join the undertaking of the Corporations, both with reference to the 1875 and 1876 Bills of the old Company. Having traced the history of the transactions to the present time, it said: "It now only remains to decide whether South Stockton will exercise the power it possesses of becoming jointly interested in the water undertaking, and sharing equally in any profit or loss with the boroughs of Stockton and Middlesbrough in the proportions of five-twelfths Stockton, six-twelfths Middlesbrough, and one-twelfth South Stockton, each one-twelfth having one representative on the Board; or whether it will remain as it is, subject, of course, to the increased charge on domestic consumption of 25 per cent.. In the latter case you have no risk of loss or of any charge upon the rates, but merely that consumers of water for domestic purposes will pay one-fourth more than is levied in the boroughs of Stockton and Middlesbrough. The cost of the undertaking has been very much in excess of what was anticipated, but nevertheless I have the fullest conviction that at no distant day, and when the trade of the district revives, the undertaking will be an exceedingly profitable one; and if I were called upon to make a recommendation, it would be that South Stockton should avail itself of the power the agreement gives you, and acquire a share in the undertaking. If this is declined, then the whole cost of South Stockton, consequent upon obtaining the Act of the Corporations, amounts to £146 12s. 4d., which is equal to about a penny in the pound upon the rateable value of the district." After a short debate, a resolution agreeing to the recommendation of Mr. Dodds was carried unanimously, and only needs confirmation by the ratepayers before it can be carried into effect.

THE EDISON LIGHT.

How many patents Mr. Edison will consider it necessary to secure, in order to protect his electric light, we cannot possibly determine. There are three in hand already, and it would be no great marvel—considering the man—if the three were to become thirty. In the meantime, the patent law of France proves unfriendly to the Edisonian policy of keeping the exact nature of the invention secret as long as possible. The text of the first specification has been made public across the Channel, and has appeared in England, though it is by no means certain that the version published in the columns of the *Standard* is a translation from the French. We have heard another history of that document; but as we have reason to believe that the specification is correctly given by our enterprising contemporary, that is sufficient for the purpose. The revelation, however, is not in itself very luminous, and it has the disadvantage of being unaccompanied by drawings, although bristling with letters of reference. Neither would the particulars given be likely to strike any one as very extraordinary, were it not for the amount of trumpeting which had preceded the affair. In one sense there is something extraordinary in the specification, and that is the description which Mr. Edison gives of the machine which is to supply the electric currents. A contrivance, like a gigantic tuning-fork, is made to vibrate—or, rather, the limbs of it are made to simulate vibration—by means of engines dependent for power on the action of air, gas, or water. Magnets, cores, and helices are connected with the tuning-fork—which itself may be two mètres long—the connection being such that the vibrations of the fork give rise to induced currents of electricity. Mr. Edison conceives that there is some economy of power in this arrangement, for he says: "It has been known that vibrating "bodies, such as a tuning-fork or a reed, can be kept in "vibration by the exercise of but little power." This passage sounds singularly unscientific. It takes "but little power" to make a drum revolve when it has nothing to do; but as soon as the drum has to perform some useful work, the power applied must be in proportion to the work that has to be performed. A vibrating rod may be a convenient device for the exercise of mechanical movement, but the economy of power which it effects may be no more than that of a drum. It may constitute "an improvement in the method of, and means for "developing electric currents;" but it is difficult to conceive that any startling results are to flow from such a moderate exercise of ingenuity. The light is produced on the principle of incandescence, and the over-heating of the spiral coil of platinum, or other metal emitting the light, is prevented by an automatic arrangement which is itself brought into operation by excess of heat. The device is doubtless clever, but we cannot see that the cleverness is sufficient to accomplish all that has been promised. Were it not for Mr. Edison's celebrity, it is most likely that neither the machine nor the lamp would attract particular notice. What the other patents may effect, we must wait to know; but the present sample is hardly likely to maintain the excitement which has been got up on the question.

As if to compensate for the flatness of patent No. 1, we have the history of another "interview" between Mr. Edison and a representative of the New York Press. The narrative of this interview, in a recent impression of the *New York Herald*, is somewhat valuable, on account of certain admissions of an apologetic nature which are credited to the great inventor. After the manner of the Transatlantic Press, we have some significant announcements at the head of the column. Not content, as the London papers would be, with the bare title of "Edison's Light," the New York journal adds, "Already Perfected, but Requiring "to be Cheapened." We have learned over here that the electric light, as exhibited by M. Jablochkoff and others, is not cheap, and we should rather conclude that if in any instance it were "already perfected," there would be no prospect of it being made any cheaper. As a matter of fact, the public have not yet seen a light that is either cheap or perfect; but we are prepared to witness some improvement, including a reduction of the cost. We have knowledge of an electric lamp about to be exhibited, which, apparently, exceeds in simplicity any that has yet been exposed to public view. Mr. Edison's lamp, so far as we can at present understand it, lacks simplicity, and, according to his own confession, the working of it is not sufficiently cheap. But while we are discussing the merits of Mr. Edison's light, we are interested in something to be said on the other side; for we find by the multiple title at the head of the New York narrative that this report sets forth, among other things, "What the Professor "has to Say about the Gas Companies." Glancing down the column, we come to a section which is designated, "Reply to "the Gas Men." Mr. Zollikoffer, of the Metropolitan Company, has said, "We have watched Mr. Edison's experiments, and we "do not find that he has yet done anything more than we "expected." Mr. Edison suggests, by way of reply, that Mr. Zollikoffer has no place in his laboratory. That is to say, Mr. Zollikoffer cannot tell what Mr. Edison is doing. The answer is a safe one, and has the advantage of being always available. Then again: "Mr. Charles Roome says I do not comprehend "the real philosophy of electricity." We believe this authority to be right. It has been stated, and we are not aware that it has ever been contradicted, that Mr. Edison neither knows nor likes mathematics. Yet, without the power to conduct a mathematical analysis, it is impossible to advance far in the knowledge of electricity. Mr. Edison is doubtless a marvellously inventive mechanic, but he is not a philosopher or a mathematician, and for that reason he is likely to miss his way on the subject of the electric light. We see now that his method of illumination is one of incandescence, and electricians know very well that while the electric light in this form admits readily of subdivision, there is a great loss of power. There is economy in respect to the distribution of the light itself, but there is great waste of power in the distribution of the current.

"It won't make a particle of difference what these gas people "say, *pro* or *con*." Mr. Edison may take all the comfort he can from this reflection, but the same principle applies to himself. He goes on to say, "This cry against my discoveries may help "some people to unload their gas stocks." Mr. Edison apparently wants all the talk to himself. "I am Sir Oracle." With a bold plunge he declares, "The electric light is an accomplished fact, "and it is more economical than gas." This is important news, but it awaits confirmation, as Mr. Edison himself implies, when he immediately adds, "But to make a perfect demonstration of it "requires that certain requisite machines shall be determined "upon, because, if we do not start with the right kind of "machines, it would cost a great deal of money to make "others." The Professor, as he is called, takes a long time to start, and for the present he seems to be in a fog. He has not yet "determined" on the right kind of machine, although the production of such a machine is requisite for "a perfect demonstra-"tion." The gentleman from the *New York Herald* seemed to feel that it was no use going any longer on this track, and forthwith hazarded the inquiry—"How long will it take to perfect "the light, Professor?" "Just as soon as I decide upon the "form of generators and lamps," was the reply. And what a reply it is! Mr. Edison, who announces that "the electric light "is an accomplished fact, and is more economical than gas," declares in a minute afterwards that he has not yet decided what machine to use, or what lamp to put up! Surely Mr. Edison is scarcely doing himself justice. The veriest tyro in a telegraph office might proclaim himself ready to snuff out the Gas Companies by some new form of the electric light, only he had not yet decided exactly what machine or lamp he should use for the purpose.

"To what extent has the division of the electric current "been accomplished?" This was one of the questions put to Mr. Edison. He replied, "Well, on one circuit, with "sixteen-horse power, I had 448 lamps of iron wire, curled "spirally, heated red hot." It is explained, that these lamps "were made, not to give light, but to test the number "that could be brought to a red heat upon one circuit." Platinum was not used, because of the expense; but Mr. Edison said, "The size of these lamps was such that, when one was "made of platinum-iridium, it would give a light equal to a "gas-jet, provided a certain amount of power was used." The reader will notice the last clause—"Provided a certain "amount of power was used." All the world knows that; but we should like to know how much power goes to the maintenance of a given number of lamps, affording a specified amount of light, on one circuit. For the present, all is vague. "It only requires the extra amount of electricity which I "can bring, to raise the temperature of those 448 lamps "to a white heat." Mahomet can change the mountain into gold. Then why does he not do it? "You can't get some-"thing out of nothing," says Mr. Edison. We are glad to hear him say so. He is improving. Taking fresh courage, he presently declares—"There is no reason why twenty thousand "lamps cannot be placed on one circuit, if they are made right." With the saving clause as to the lamps being "made right," we may concede that Mr. Edison is right also. He denies ever having said that "ten thousand lamps could be run on one "machine." All he owns himself responsible for is a statement that so many lights "can be run on one circu t from one station," but not from one machine. "The problem I am now solving," says Mr. Edison, "is how many lamps of fifteen-candle power I "can get per horse power per hour, or how much light I can get

"from one pound of coal." For the present he is "absolutely "certain" that he can obtain, by the expenditure of one-horse power per hour, "four lights, each equal to a gas-jet." It may suffice to say that Mr. Edison was expected to do very much more than this.

Mr. Samuel Carter, Vice-President of the New York Gaslight Company, has remarked that if there was anything of practical value in Mr. Edison's discoveries, the streets would already be lit by electricity. "Just think of such a thing," said Mr. Edison to the gentleman from the *New York Herald*. "The idea that a "man can go to work and invent a whole new system, overturning "an established business, especially such a complicated system "as electric lighting, all within a few months!" The Professor then searched among his books, and brought out twenty-five large quarto publications on the science and practice of gas-making. "Now, just see," he said, "twenty-five volumes on "that one thing alone, and that mostly mechanical!" Then, *au contraire*, he went on to say that the business he was about "requires a knowledge of the most complicated branches of "science—of heat, light, electricity, magnetism, engineering, "mechanics, chemistry; in fact, of all the sciences, "except botany," and then he laughed. But he used a fair argument when he said that if lighting by gas were not already known, the mere discovery that it could be done would be followed by an interval of at least five years before the system came into general use. Allowing five years for gas, how much are we to allow for electricity? How many "large quarto volumes" is the world to be troubled with before it gets the light? Will Mr. Edison live long enough to reach the end of his labours? He has made four hundred and forty-eight pieces of iron wire red hot, using an engine of sixteen-horse power for the purpose. He is "absolutely certain" that he can light up four lamps, each equal to a gas jet of fifteen candles, with one-horse power; though we are not told that he has actually accomplished the feat. But then he has done something else. "I have to-day," said Mr. Edison, "produced the highest "temperature that has ever been made by artificial means." He concentrated the electricity from a sixteen-horse power machine into the space of half an inch, by enclosing carbon points in a block of lime. Pieces of iridium, dropped into the flame, volatilized immediately with an explosion. "A small screw-driver "passed across the flame would be cut in two, the part touched "by the heat melting instantly." Granting all this, we still want the light. Mr. Edison proposes to accomplish that which —if it were cheap—would directly compete with gas. Thus, he says—"My idea is to make the light about fifteen-candle power— "that is, about the same intensity as a bright gas light." He explains—"The trouble about the delay is that laboratory "experiments, although they may show something to be perfectly "practicable to one familiar with such things, yet require careful "study before being brought into general use." There is some candour about this. We only dispute whether the laboratory experiments would be held to demonstrate this something "to "be perfectly practicable," if they were investigated by a well-qualified electrician. Mr. Edison has shown great skill in devising a lamp, although the mechanism utterly unfits it for the purpose which we were originally told it would fulfil. There was simply to be a slight adjunct to the usual gas-fittings, which were to be utilized in the new system. The lamp now before us is altogether unsuited for such a purpose, and we very much doubt whether it would be at all available for street lighting. But, granting the lamp to be satisfactory, the great problem of supplying the electric current in a practical and economical form yet remains to be mastered. The engine now before us, according to the specification, is little better than a bogus.

As to the time which Mr. Edison sets himself for the completion of his enterprise, he says, concerning his light:—"We will "have it here within a year, but I cannot say that it will be in "general use by that time." By this we understand that it will be nearly a year before the buildings in Menlo Park are lit up with the Edison light. Such "lighting-up," even when accomplished, may altogether fail to show that electricity can compete with gas. Here in England we have seen Billingsgate Market lit up, and the Holborn Viaduct, and the Thames Embankment, and Westgate-on-Sea, besides here and there a railway station, and sundry other places. But gas is still master of the situation. We believe that Mr. Edison has incautiously raised expectations which he is anxious to fulfil, but which are taxing his energies to an extent which he little anticipated. We pity the man who is thus committed to an Herculean task, and, for his own sake, we hope he will not drive on at this harassing enterprise until we hear some day that, despite all the buoyancy of his spirit, and his extraordinary power of endurance, he has sacrificed his health and broken down at his work. The first in the long series of patents which we are led to look for in reference to the Edison light, is not encouraging, and the report of the latest "inter-"view" reads very like an apology for delay and disappointment. The apology is reasonable enough, but it is not consistent with the glowing expectations and triumphant announcements with which Mr. Edison's discoveries on the subject of the electric light were first proclaimed.

GAS BILLS FOR 1879.

(*Continued from page* 190.)

THE *Lancaster Gas Bill* is to authorize the Lancaster Gas Company to raise further capital and acquire land for additional works. The original capital of the Company was £30,000, with power to borrow £7000, all of which has been raised and expended, and the share capital converted into stock. The demand for gas in Lancaster, as almost everywhere else, continues to increase, and the Company now seek authority to raise additional capital to the amount of £66,400, carrying the usual borrowing powers. The object is to purchase land and make railway sidings, and to re-model their present, and construct other works, as may be deemed desirable. Power is also sought to supply engines, stoves, fittings, and indeed everything that is now used in the consumption of gas, whether for heating, cooking, or lighting purposes. The Bill proposes also to obtain power to supply the electric light, and everything connected with its installation and maintenance. The new shares are, of course, to be offered by auction, and the premiums applied as usual. The Bill does not propose the sliding scale, nor does it mention any standard price. Gas of fourteen-candle power is to be supplied, tested by the "London" burner, No. 1.

The *Mirfield Gas and Light Bill* is to extend the limits of the Mirfield Gas Company, and to authorize them to raise further capital. The Company, it seems, have raised and expended all the capital (£43,000) they were authorized to raise by their Act of 1860, and they have borrowed no money. By this Bill, they seek power to raise £57,000 additional capital, and authority is sought to borrow £10,000 in respect of their original capital. As regards the new, they apply for power to borrow £14,250, £2500 being raised as each £10,000 of capital is issued. The standard rates of dividend are ten per cent. on the original, and seven or six per cent. on the additional, according as it is raised. The standard price of gas, subject to the sliding scale, is 5s. per thousand feet. Auction clauses are, of course, inserted. The illuminating power of the gas is to be fourteen candles, tested by the usual burner. The Company go in for the electric light, and ask power to sue for any charge that may have been agreed upon for supplying it.

The *Newcastle-upon-Tyne and Gateshead Gas Company's Bill* is to confer further powers. The present capital of the Company is £450,000, and they have borrowed £97,935, all of which has been expended. The consumption of gas is, of course, rapidly increasing in Newcastle and Gateshead. The additional capital asked for is £300,000, carrying the usual borrowing powers. The shares are to be offered by auction or tender. The standard rate of dividend on the additional capital is seven per cent. Subject to the sliding scale, the initial price of gas within the boroughs is to be 3s. 4d. per thousand, and beyond their limits, 4s. The gas to be supplied is to have the illuminating power of fifteen candles, tested by the "London" burner, and is not to contain more than twenty grains of sulphur in one hundred cubic feet. The Company seek power to supply the electric light, and any other new illuminant that may turn up, and to manufacture and sell all the apparatus for the use of the former. By a very unusual provision in the Company's Act of 1864, all the Directors are compelled to retire annually. This it is now proposed to amend by adopting the provisions of the Companies Clauses Consolidation Act, 1845, relating to the retirement and re-election of Directors.

The *Plymouth and Stonehouse Gaslight Company's Bill* is to extend the powers of the Plymouth and Stonehouse Gas Company. The original capital was £75,000, and they have issued shares to the value of £20,000, in lieu of borrowing, only one-half of which amount has been paid up. They now seek to raise additional capital to the amount of £60,000, carrying the usual borrowing powers. The dividends on the new capital are limited to seven and a half or six per cent., according as it is raised. Neither auction clauses nor sliding scale is mentioned in the Bill, nor is any standard price for the gas fixed. This is of little moment, as the Company supply gas at almost the lowest rate charged in the country. Beyond the power to raise additional capital, the principal object of the Bill is to obtain for the Company power to supply the electric light.

The *Preston Gas Bill* is to authorize the Preston Gas Company to extend their limits, and to raise further capital. The Company

were incorporated in 1865, when their capital amounted to £120,000. By their Act of Incorporation they obtained power to raise a further sum of £120,000, and to borrow on both old and new capital to the ordinary extent. The Company now seek power to raise further capital to the amount of £160,000, carrying the usual borrowing powers. The new capital is to be offered by auction or tender. As some of the suburbs of Preston badly want lighting, the Company propose to include them in their district. The dividend on the new capital is limited to seven or six per cent., according as it is issued as ordinary or preference. The sliding scale is not proposed in the Bill. As a matter of course, the Company seek power to furnish the electric light, or any other new illuminant. Efforts, we notice, have been made by the parliamentary draftsman to fix a way, or a mode of charging for the electric light; but it only comes to this, that the charge is to be fixed by agreement between the parties.

The *Sligo Gas Bill* is promoted mainly for the purpose of enabling the Sligo Gas Company to supply the electric light. The Company now propose to supply fourteen-candle gas, tested by the new "London" burner, with a reduced maximum price of 8s. per thousand. The Bill proposes to fix the remuneration of the Directors, Secretary, and Auditors, the rates of which we need not mention here. No new capital is asked for.

The *South Shields Gas Bill* is to obtain further powers for the South Shields Gas Company. The present capital of the Company amounts to £71,476, and they have borrowed £19,300. By the Bill they seek power to raise further capital to the amount of £80,000, carrying the usual borrowing powers. The new shares are, of course, to be offered by auction or tender. The standard rate of dividend on the new capital is to be seven per cent. Subject to the sliding scale, the initial price of gas is to be 3s. 6d. per thousand within the boroughs of South Shields and Jarrow and the district of the Local Board of Health of Hebburn, and 4s. beyond. It is proposed to supply fourteen-candle gas, tested by the burner prescribed in the Company's Act, 1867; purities remaining as fixed by that Act. They seek power to purchase additional lands for the erection of new works, and apparently for the purpose of working up residuals. As a matter of course, the Company seek power to supply the electric light, and to manufacture and furnish all appliances necessary for its generation and use. The charge for the light is to be fixed by agreement.

The *Stourbridge Gas Bill* is to grant further powers to the Stourbridge Gas Company. Up to the present time, the Company have raised capital to the amount of £27,000, and have borrowed £1000. They now seek authority to raise £50,000 for the acquisition of land for the erection of new works. The usual borrowing power with respect to the new capital is, of course, sought. The new shares are to be sold by auction or tender, and the dividends are limited to seven or six per cent., according as they are issued as ordinary or preference. The Company propose to supply thirteen-candle gas, tested by the burner prescribed in their Act of 1866, and they shirk the provisions of the Gas-Works Clauses Amendment Act, 1871, respecting testing, &c. They also seek power to supply the electric light, or any other new illuminant.

There is but one Bill promoted to authorize a Local Authority to purchase a gas undertaking. It is—

The *Wombwell Local Board Bill*, which is intended to empower the Wombwell Local Board of Health to take over the undertaking of the Wombwell and Darfield Gas Company. The Company have expended £4000 on their works, and were preparing to expend a further sum of £14,000 in extensions and improvements; but here the Local Board step in with an offer to take over the undertaking, in consideration of the payment of a lump sum of £8000 on the 31st of December next. In the meantime, and up to that date, the Board are to pay interest on the £4000 already laid out, at the rate of five per cent. per annum; and, if the purchase-money be not paid at the stipulated date, interest at the rate of ten per cent. is to be paid. The Local Board propose to supply fourteen-candle gas, at a maximum price of 5s. 10d. per thousand feet within the township of Wombwell, and 6s. 3d. within the limits of the township of Darfield. The Board are to provide a testing-place, furnished with Sugg's "London" No. 1 Argand burner. Being a very insignificant place, the Board naturally apply for power to supply the electric light, and to do all and everything required in connection with its use. Power is sought to borrow £16,000 on mortgage, and any other sum the Board may be allowed under the Public Loans Act. It is proposed to pay off the borrowed money by means of a sinking-fund, which is not to be commenced until three years have elapsed from the passing of the Bill. The net profits of the undertaking are to be carried to the general district fund.

The *Exeter Corporation Gas Bill* was intended to obtain power for the Corporation to take over the works of the Exeter Gas Company, upon terms settled by agreement; but, as a statutory town's meeting refused the Town Council authority to pay, out of the Corporation funds, the expenses of obtaining the measure, we may take it that this Bill will be dropped. It may be proceeded with, but it will be at the individual risk of the Town Councillors, who, if unsuccessful, will have to pay the costs out of their own pockets. The circumstances have been so frequently referred to in our columns, that they need not be again mentioned.

The *Liverpool Lighting Bill* is to authorize the Corporation of Liverpool to acquire the undertaking of the Liverpool United Gas Company, if an agreement can be come to within three years from the passing of the Bill—if it should pass. It is also to authorize the Corporation to supply the electric light. Of course, no terms of transfer have yet been settled; but it would appear that the Corporation offer annuities, but at what rate this Bill does not inform us. It is an extremely crude measure, which probably will not long occupy the attention of a parliamentary committee.

The *Over Darwen Corporation Bill* is promoted to extend the borough, and to purchase such part of the gas plant of the Corporation of Blackburn as lies within the extended limits. The Bill seeks to enact that the Corporation of Over Darwen may buy, and the Corporation of Blackburn shall, on demand, sell the plant as above mentioned, at a price to be settled by agreement or arbitration. The Corporation, of course, seek power to supply the electric light.

The *Rawmarsh Local Board Bill* is to empower the Local Board of Rawmarsh to make a compulsory purchase of such gas plant belonging to the Rotherham Corporation as lies within the limits of the Board. The Bill proposes to enact that if the Rawmarsh Board, at any time within six years after the passing of the Act, give notice in writing to the Corporation of Rotherham, the latter shall sell, and the former shall purchase the plant as above mentioned. The consideration to be paid is to be settled by agreement, or by arbitration if no agreement be come to. The Board have evidently made a guess at the price, for they ask power to borrow £16,000 for the purchase of the plant and the construction of new works, and the land on which to place them. They ask further £3000 for working capital. The Board propose to supply fourteen-candle gas, tested by the new "London" burner. As regards price, they propose to charge a consumer taking 44,500 feet or more per annum, 3s. per thousand feet; any customer taking less will have to pay 3s. 3d. per thousand. The Board apply for all the usual powers granted to Local Authorities in respect to gas undertakings.

The *Stratford-upon-Avon Gas Bill* is to authorize the Local Board to purchase the undertaking of the Stratford Gas Company, on the payment of annuities representing the dividends paid on the several classes of shares and stock, or a lump sum representing those dividends capitalized at twenty-five years purchase. The Board assume the mortgage debt of the Company, but leave them their reserve-fund. They propose to supply fourteen-candle gas, tested by Sugg's No. 1 "London" Argand burner, at a price not to exceed 5s. 6d. per thousand feet, and also seek power to supply gas-fittings and the electric light. The Board seek power to borrow, in respect of the gas undertaking, £2500 for paying off the mortgage debt of the Company, and £7500 for working capital. The money for the redemption of the annuities is to be raised as required.

The *Tipton Local Board Bill* is to enable the Board to relinquish the site on which they intended to erect their gas-works, and to acquire, by agreement, other land which they consider more suitable for their purpose.

The *Warrington Corporation Bill*, so far as it relates to gas, is to obtain power for the Corporation to erect new works, for which purpose they seek power to borrow £20,000. It should be added that authority is also sought to supply the electric light, and if they should ever set up a lamp, the cost of it will be defrayed out of the sum named.

The following Bills having already been noticed in our "Circular" (Vol. XXXII., p. 953), need not be further alluded to here:—*Alliance and Dublin Consumers, Crystal Palace District, London Gaslight, The Gaslight and Coke Company.*

There remain two nondescript Bills, which will not fit into our classification. These are—

The *Aire and Calder Navigation (Goole Gas and other Lighting) Bill*, which is to confer further powers on the Undertakers of the Rivers Aire and Calder in respect of their gas undertaking, and for other purposes. In the year 1839, the Aire and Calder

Navigation Commissioners started gas-works at Goole, upon which they have spent £22,000; they now seek power to extend these works, and for this purpose a sum of £18,000 is immediately requisite. These two amounts, making a total of £40,000, are to be called "original" capital, and to be entitled to a dividend of ten per cent. Power is sought to expend such further sums upon the works as may be required, but it is not stated from what source the money is to come. The Commissioners propose to supply fourteen-candle gas, tested by Sugg's "London" burner, No. 1, at a price not to exceed 5s. 6d. per thousand feet, and they are to furnish a testing-place, as required by the Gas-Works Clauses Amendment Act, 1871. For the rest, they ask for all the powers usually granted to a Gas Company, as well as for permission to supply the electric light.

A Bill, entitled the *Birmingham Gas (Differential Charges Repeal) Bill*, promoted, we believe, by the Rural Sanitary Authorities of King's Norton and Yardley, is intended to take from the Birmingham Corporation the power they now possess, under the Birmingham and Staffordshire Companies Act, and their own Act of 1875, to charge sixpence per thousand more for gas in Northfield and Yardley than is charged in the borough of Birmingham and all surrounding suburbs but those mentioned in this Bill. The measure is certain to be opposed by the Corporation of Birmingham, who will, no doubt, show sufficient justification for the extra charge they impose.

The following are Improvement Bills. The one feature interesting to us is that, in each and all, power is sought to furnish the electric light:—*Blackburn Improvement, Blackpool Extension and Improvement, Derby Improvement, Leicester Corporation, South Shields Extension and Improvement.*

A TREATISE ON THE SCIENCE AND PRACTICE OF THE MANUFACTURE AND DISTRIBUTION OF COAL GAS.

CLXIX.

THE TREATMENT OF RESIDUAL PRODUCTS.

DISTILLATION OF COAL TAR.—THE ENGLISH SYSTEM (*continued*)

It is not easy to prescribe complete directions for managing the tar-still during the working of the charge. Stills, like other pieces of apparatus, have their individual peculiarities. Some work with extreme ease and regularity, and others are constantly giving trouble, although apparently built on exactly the same lines.

If the fire be properly managed, distillation will commence in from two hours to two hours and a half from the time of firing up; and here the judgment of the stillman must come into play. If the distillation is too rapid, he must open the fire-door, or even draw some of the fire. The sounds which are heard at the end of the worm, and even the appearance of the vapour in its motion and colour, have all a meaning to the skilful and attentive stillman. When the tar begins to expand in the still, the vapour may come in puffs; this arises from the breaking of large bubbles which are formed in the interior of the still.

After a certain amount of fluid has been received—which amount varies with the quality of the tar and the rapidity of firing—the distillate becomes less and less in quantity, and, at last, almost ceases. The reason of this is that the water in the tar has become less, and no longer brings over so much naphtha. The fire is now to be increased, and, after a time, the distillation becomes more rapid. The stillman has at this point to test the distillate frequently, to see if the naphtha floats on, or sinks in water. Directly the latter happens, the distillate is to be received in a different vessel. This oil, which sinks in water, is called creosote, or creosote oil—an incorrect name, it is true, but it is in almost universal use. This creosote oil is partly soluble in alkalies, and will be more minutely described when we come to the Scotch and French processes. The chances of the worm being stopped up by naphthalene become less as the creosote oil distils, it being very soluble in it.

The stillman must now test the runnings frequently, to see whether they "set." To do this, a glass plate is used by the more skilful operators. When the distillate sets to a soft paste, the fire may be withdrawn, and the pitch, after a proper interval, be run out by the cock, M, fig. 7. The last portions of oil which "set" are valuable, as containing anthracene.

The working results to be obtained from a charge of 1200 gallons, vary so greatly, according to the nature of the tar and the care with which the distillation has been made, that it is exceedingly difficult to give any average which will be satisfactory to distillers in different parts of the country. The following are placed side by side as extreme cases:—

		Lancashire.*	London.†
Ammoniacal liquor	gallons	30	50
First light oils	„	33	20
Second light oils	„	157	20
Creosote oils	„	104	250
Anthracene oils	„	229	50
Pitch	tons	3·25	4

The first light oils are those which come over with the water at the commencement of the distillation. At this period a pause takes place in the distillation. The second light oils are those which come over after the pause, and before they become heavy enough to sink in water. The creosote oils are those which sink in water, and the anthracene oils are those which "set" on a glass plate on cooling. The modes of purification by acids and alkalies, and the final rectifications, will be found in the descriptions of the Scotch and French processes.

* Watson Smith.

† "Chemistry as Applied to the Arts and Manufactures." Mackenzie.

THE SCOTCH SYSTEM.

We have already stated the reason for giving this name to the method we are now about to describe, and that it is merely done for convenience.

When the distillery is in the immediate neighbourhood of a gas-works, the tar and ammoniacal liquor run direct from the measuring apparatus into large sunk tanks. The latter are, as in the English system, so arranged as to take advantage of the fact that the specifically heavier tar sinks, while the ammoniacal liquor floats above it. It is, consequently, easy so to arrange the tanks that the liquor shall flow over into separate reservoirs, connected, by means of pipes, with the pumps of the liquor stills. The tar-tanks, are, on the other hand, connected with the pumps of the tar-stills.

It is essential, for the successful working of the plant, that the stills, and all other appliances, should be even more than adequate to the working up of the tar and ammoniacal liquor as fast as they are produced in the gas-works.

The reasons for sinking the tanks underground are, *inter alia*, to avoid unnecessary pumping, and to save, as much as possible, the space required for the apparatus employed in working it up.

During certain of the winter months, it is sometimes no easy matter to work up daily all the tar and liquor which flow into the tanks; while, on the other hand, during the summer, a certain portion of the plant will be almost idle. There is no means of avoiding this inconvenience without sacrificing still more important considerations.

There are four stills which are, under any circumstances, required in the manufacture of naphtha; they are—

The tar-still.	The rectifying still.
The re-run still.	The pitch-still.

The first operation in the preparation of coal naphtha by the process we are now describing, is the charging of the tar-still with green tar. It must be remembered that the term "green tar" is applied to tar which has not undergone the first distillation in a current of steam; after that treatment it is called "boiled tar."

The tar-stills are constructed of the best stout boiler-plate, and should have a capacity of about 4000 gallons. The greatest care must be taken to allow of plenty of working space. They should, therefore, not be charged with more than 3000 gallons at a time. The pump by which they are charged may be worked by a small donkey engine, the steam for which may be obtained from the same source as that required for working the still.

The tar-still is worked by direct steam. The pipe conveying the steam passes along the whole length of the bottom of the still, and is pierced with holes in every direction. By this means the steam exerts its maximum effect, full agitation and circulation take place, and the distillation is effected in far less time than would be the case if it were merely immersed in the tar at one end.

From what has been said it will be evident that the tar-stills employed are of quite a different form to those worked by direct fire. Instead of being set vertically like the latter, they are horizontal, and set somewhat like an ordinary steam-boiler, but, of course, without flues or fire-places.

The distillation is to be steadily carried on until the distillate acquires a specific gravity of 0·850. Formerly, the distillation was carried much further, and, in some works, until a specific gravity as high as 0·920, or even 0·950, was reached. In this way of working, they obtained from a charge of 3000 gallons as much as 300 of rough naphtha, or 10 per cent., if the tar was of first-rate quality. This mode of working is now quite antiquated.

In some tar-works the naphtha, as it comes over, is received in puncheons; but it is much more convenient to have some arrangement by which all the distillate can be mixed together. Large tanks, or boilers, sunk underground, are the best and safest receptacles for this purpose.

As it is absolutely essential to ascertain that these vessels do not leak, it is proper to insist that the "yard foreman" should take advantage of any holiday, or other time when a tank full of naphtha remains undisturbed for a day or two, to ascertain, by means of a dipping-rod, that the level has remained unchanged. For want of proper examination of storing-tanks, we have known serious losses to be sustained.

The mixed distillate constitutes "rough naphtha." The boiled tar remaining in the still is to be run out, after the distillation, into any convenient receptacle. In large works the quantity is so great that tanks would be too expensive, and the boiled tar is run into "tar ponds." The tar is always covered with a few inches of water, partly to ensure against fire, and partly to prevent injury by exposure to the air, as it sometimes accumulates too rapidly to be worked up in the busy time during the winter months. In the latter case, it forms a source of employment during the summer, when the tar and rectifying stills are comparatively little used.

It is not found advisable, in practice, to treat rough naphtha with acids and alkalies direct, because a large amount would be wasted in acting on impurities which can be more economically removed by re-distillation.

The next operation is, therefore, to pump the rough naphtha into the "re-run," or No. 2 still. A still of 2000 gallons capacity will be sufficient for this purpose; it may be charged with 1600 gallons. This distillation, like the last, is conducted in a current of steam, but

the distillate, instead of being mixed, is to be carefully received into puncheons of 100 gallons each. If the tar be of good quality, the two first may be put aside as "rough benzole."

The thick tarry matter remaining in the bottom of the still generally amounts to about 100 gallons. It may be run into the creosote oil tanks, to be presently described.

In working the tar and re-run stills, it is evident that, as the operation is conducted in a current of steam, the distillate will be a mixture of naphtha and water. In order to facilitate the removal of the water, it is necessary to employ a piece of apparatus which will enable the naphtha to be received in a comparatively dry state as fast as it comes over. This apparatus (fig.10) is called a separator. It may

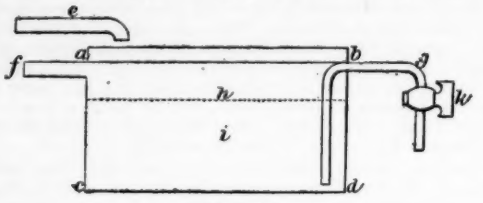


FIG. 10.

be made in several different ways, but the simple form shown in the above engraving answers the purpose effectually. It consists of a stout rectangular box of wood, *a b c d*, lined with lead. The nose, *e*, of the still conveys the mixture of naphtha and water to the separator; but, owing to the difference in specific gravity between the two liquids, they immediately separate, and, the naphtha rising to the surface, flows away into the puncheon, or other receptacle prepared for it, by the pipe, *f*. The water, on the other hand, runs away, as soon as the level in the trough rises high enough, by the syphon, *g*. It will be seen that the longer leg of the latter is inside the separator. It is necessary to have a tap in the syphon, at *k*, because if the naphtha in the still consists chiefly of benzole, and is, therefore, very volatile, at the commencement of the distillation the two liquids might not occupy the relative positions seen at *h* and *i*, but the water might be in such small quantity that the naphtha would escape by *g*. To prevent this it is only necessary to close *g* until sufficient water has collected in the separating-box to prevent such an accident. As the water accumulates, the tap, *g*, may be gradually opened more and more, until the more volatile portions of the contents of the still have been received over. As soon as the distillation has arrived at this point, it will go on without requiring any special precautions.

(To be continued.)

Correspondence.

[We do not hold ourselves responsible for the opinions expressed by Correspondents.]

ELECTRIC LIGHT BILLS IN PARLIAMENT.

SIR,—In the JOURNAL of the 4th inst., you informed your readers that of the two Electric Light Bills, for this session, one had been withdrawn. Will you now be good enough to say that the other, although not actually withdrawn, is not, I have been credibly informed, to be further proceeded with. It may, therefore, be expected that the powers to supply the electric light will be struck out of all the Gas Bills in which they have been inserted.

The Altrincham Bill, referred to in the JOURNAL of the 11th inst., you will be glad to hear has been withdrawn. W. LIVESEY.

Gas and Water Companies Association, 6, Victoria Street, Westminster, S.W., Feb. 15, 1879.

LOW-PRESSURE BURNERS.

SIR,—As I could not attend the meeting at the Society of Arts, at which Dr. Wallace read his paper on "Gas Illumination," will you kindly permit me to make a few remarks regarding the discussion which took place afterwards? It might have been more profitable generally had the purely personal element, as to whom belonged the credit of certain modifications of gas-burners, been left to be settled in some other place. However, as the subject was gone into, and as credit was claimed where it was not due, it is but fair that the honour should be properly placed.

Mr. Sugg claimed to be the inventor, about seven years ago, of what he called the hollow-top burner, to which I have given the title of "slit-union," because it furnishes the same shape of flame as the union jet. Now, this burner was first patented in 1860, by Joseph and James Wadsworth, of Marple and Salford, who sold the patent to Ralph Heaton and Son, of Birmingham, and the burners have been manufactured by them ever since, and millions have been sold. Of these burners I forward you specimens. About 1872 it was copied into steatite by the German steatite burner-makers (we have no steatite burners made in England), and last year I took out patents here, and in several foreign countries, for manufacturing the same burner from my own material—"enamel." It would, therefore, be interesting to know where Mr. Sugg comes in, either as the inventor or as the manufacturer of the burner in question.

Mr. Sugg also stated that he believed the Sugg-Letheby burner was "the first step in the direction of consuming gas under a low pressure." He will, therefore, be surprised to learn that there were scores of thousands of burners sold in 1858, 1859, and 1860, in the North, and I believe in London also, having a large burner at the top, with an enlarged conical, and some with a barrel-shaped middle piece, with a small burner or hole at the bottom for diminishing the flow of gas. There were many burners patented about this time, having this object in view, among them being Hart's, Defries's, Da Costa's, and the Wadsworth's above mentioned. Also included in their patents are arrangements for lessening the pressure. From this time to the advent of the Sugg-Letheby burner, many others made their appearance, and more were recorded in the Patent Office. Almost any gas engineer of 20 years standing will be familiar with the facts of the existence of this kind of burner; and it was an experiment with one of these, shown to the writer, that first directed his attention to the subject of improvements in gas lighting.

Perhaps the discrepancy between Mr. Sugg's statements and the above may be capable of explanation, and, I think, requires it.

Leeds, Feb. 11, 1879. GEO. BRAY.

THE ECONOMICAL USE OF FUEL.

SIR,—Observing in your publication of the 21st ult. that the Gas Companies in London are unable to move off their coke in a satisfactory manner, I beg to state, for your information, some experiments that I have been making in my own house on this matter.

It is well known that in every household there is a considerable quantity of small slack remaining after the large and round coal has been used, and the difficulty with householders has been, in a great measure, how to dispose of it. The following will, I have no doubt, be useful, and it will also be very economical in cases of poor people, as well as useful in families of a better class:—

When the fire is lighted, take a quantity of coke and throw it on the back of the fire—as far back as you can. Upon the top of this, throw some of the smallest slack that you have—sufficient to cover the coke—and let it burn without being stirred. This, of course, as you will see, restores some of the properties of the coke which have been taken from it by the manufacture of gas, and will make an excellent fire at a very low cost.

I caused the fire in my dining-room to be made up at two o'clock in this manner, and it was not disturbed until about eight at night. The fire burned very brightly, beginning at the bottom, and gradually extending to the top; but the great secret of the matter is not to allow it to be stirred, as it prevents the slack and coke soldering together.

From your large circulation amongst parties interested, I have been induced to forward you this communication. AQUA.

Manchester, Feb. 10, 1879.

Parliamentary Intelligence.

HOUSE OF COMMONS.

FRIDAY, JAN. 14.

THE CONSERVANCY OF RIVERS.

Mr. CHAPLIN asked the Chancellor of the Exchequer if the Government intend, during this Session, to introduce any measure dealing with the question of floods and conservancy boards.

The CHANCELLOR of the EXCHEQUER said that a measure dealing with the question was being prepared, and would be introduced shortly.

Mr. ARTHUR PEEL afterwards gave notice of his intention, on Monday, the 17th inst., to ask the Secretary of State for the Home Department, whether it is the intention of the Government to deal this Session with the question of river conservancy and the prevention of floods; and, if so, whether by a separate measure distinct from the County Boards Bill.

MONDAY, FEB. 17.

GAS COMPANIES AND THE ELECTRIC LIGHT.

Sir WILFRED LAWSON, in the absence of Sir John Lubbock, who had given notice of the question, asked the Chancellor of the Exchequer, whether Her Majesty's Government intend to bring in any measures in reference to the Gas Companies, in case the electric light can be made perfect for general use.

The CHANCELLOR of the EXCHEQUER: Her Majesty's Government have no general measure of that character in contemplation. I understand, from my honourable friend the Chairman of Ways and Means, that he proposes to refer some Private Bills, when introduced, to a strong committee, to consider the whole question.

NEW GAS-WORKS FOR BRISTOL.—In order to meet their greatly increasing requirements, the Bristol United Gas Company have recently made arrangements to proceed with the first section of their new works at Stapleton. The drawings and specifications for these works have been prepared by Mr. Walter Fiddes, the Engineer of the Company, and a contract has been entered into by Messrs. John Aird and Sons, of London, who undertake to have everything complete and ready for the manufacture of gas by the 1st of November next. The contract for these works includes the tank and telescopic holder to contain 1½ million cubic feet of gas, the retort-house, purifier-house, and other buildings, all of large dimensions, together with the purifiers, ironwork, and other machinery.

SALE OF GAS SHARES AT TORQUAY.—Last Friday, sixty-two £10 shares—forty-nine 7 per cent., and thirteen 10 per cent.—in the Torquay Gas Company, were sold by auction without reserve, the shares belonging to an unfortunate proprietor in the West of England Bank. The first three lots of four each 7 per cent. shares realized £13 per share; the next three similar ones, £12 10s.; and the succeeding four similar lots, £13. Lots 11 and 12—four and five 7 per cent. shares respectively—sold at £12 10s. per share; while the 10 per cent. shares sold, in four lots, for £17 each. The dividend from Lady-day last was sold with the shares; but, in addition to the usual costs of transfer, the purchasers had to pay the auctioneer the rather heavy commission of 5 per cent. It will be noticed that the 7 per cent. shares made higher prices than the 10 per cent. ones.

THE WATER SUPPLY OF ELY.—At the meeting of the Ely Local Board of Health, on Wednesday, the 5th inst., a report on the state of the water-works was presented. It was prepared by Mr. H. Tomlison, the Engineer of the Cambridge University and Town Water-Works Company, and placed two propositions before the Board. One confines itself to the water supply from the river passing through Ely, which it was estimated would cost the sum of £5869. The other plan is to obtain water from the chalk, some seven miles from Ely (Isleham, or near that village), which would cost upwards of £13,500; but there would be certain matters in connection with this plan which would materially reduce the cost to the inhabitants of Ely. If the water were obtained from the chalk at this distance, Mr. Tomlison stated it would be perfect, and filtration quite unnecessary. With the report, two maps were forwarded as a guide to the Board. The Chairman and Mr. W. Harlock passed high eulogiums upon the manner in which Mr. Tomlison had acquitted himself, and it was agreed that the report should be printed and discussed at a subsequent meeting.

Miscellaneous News.

YORK UNITED GASLIGHT COMPANY.

The Sixty-ninth Half-Yearly Meeting of this Company was held on Thursday, the 6th inst.—Mr. R. Weatherley in the chair.

The Secretary (Mr. C. Sellers) read the following report:—

The business done shows a larger increase than usual, and especially in the gas department. This arises from two principal causes—first, from the exceptionally severe winter, in contrast with the extremely mild season of 1877; secondly, from the recent large increase of population in the suburbs of the city. To meet these suburban requirements, the Company have, during the past half year, laid no less than 1191 yards of mains in twelve new streets that have been formed, and relaid 533 yards of larger capacity in existing streets.

Your Directors are glad to report that the value and cheapness of gas coke, as a fuel for domestic and trade purposes, continue to be well recognized by the public, and, to still further popularize its use, they have just procured a machine for breaking it by steam power.

The scare caused amongst Gas Shareholders, by the electric light, is fast subsiding, and your Directors believe that there is no substantial ground to fear competition from that source.

The purchase of the additional land required by the Company has been completed, and the commencement of the works sanctioned by the Company's recent Act of Parliament, is receiving due consideration.

The profit for the half year has not only been helped by increased business, but by the fact that the benefits arising from a new coal contract, at a lower rate, have been in force during the whole of that time.

Your Directors recommend that the usual dividend of 5s. per share be paid upon the old shares of the Company, and 6d. per share, or 5 per cent. per annum, upon the new shares, issued on the 1st of October last, the same to be paid on and after the 11th inst., free from income-tax.

The Chairman, in moving the adoption of the report, said he not only felt that it was his duty to ask the Shareholders to show their confidence in the Directors management, but he felt a peculiar pleasure in doing so, for he thought that they would all agree with him that they had two or three substantial reasons for congratulation. In the first place, they had reason to be satisfied with the progress which their business had made during the past six months. Secondly, they had reason to be satisfied with the backbone of their position—that was, with their finances; for they all knew that if a business was not satisfactory in that department, it was not satisfactory at all. Thirdly, they had reason to congratulate themselves that they, as gas shareholders, were still in existence at all; for not long ago the panic and alarm caused in the gas world by the electric light, were so great that many people believed they were all going to be snuffed out. But he was pleased to say that they had held their own, and, as the report told them, they saw no substantial reason to be afraid of any of the existing forms of the electric light or any other light. Gas, in their opinion, had no substantial rival. The Directors had paid great attention, during the past half year, to the various electric light developments, and had from time to time done their best to keep up the courage of their Shareholders, and he was glad to be able to say that nearly all of them had stuck to the ship. And, having stuck to the ship up to the present time, he did not think, in the face of the present flickering pretensions of even Mr. Edison's light, that they would need any more encouragement from the Directors to hold on. The prices of the London gas shares were rising almost daily, and this fully confirmed the opinions he had expressed. Indeed, some of the London shares were fast reaching the level they were at when the gas panic commenced; and therefore he did not see any reason why the price of York gas shares should not follow suit. But, going back for a moment to the report, they would all have noticed the recent extraordinary additions that had been made to the suburbs of the city; street after street had been formed, and the tendency was still onwards. Well, all that justified the steps recently taken by the Company to extend their works. To meet that growing demand, they had determined to complete next summer the remodelling of their existing retorts, so as to enable them to make more gas within the same space of ground. They were now also taking in hand the great question of erecting additional works, but as that was a matter that involved considerable detail, and was one upon which they were not at present prepared to make any definite report, the Shareholders would excuse him saying more than that they had determined during the coming summer to pile or build a wall along the frontage of their new site on the banks of the River Foss, so as to raise the land above the reach of a flood. There was just one more matter in the report, which he thought they would consider deserved a passing remark, and that was the question of coke. He thought they would all agree that they had done their best to educate the public mind upon its great worth as a fuel, and he was pleased to say that its popularity was continually increasing. But there always had been one objection to its use with some people, and that was that the coke required breaking. To meet this objection, the Directors had just procured a machine for breaking coke by steam power, and though they only commenced working it on the previous Wednesday, he had no doubt that it would give satisfaction. It was a new idea, for the Company were the first in this country who had introduced machinery for this purpose.

Mr. J. F. Taylor seconded the motion, and it was agreed to.

Mr. W. W. Hargrove said he thought, after the satisfactory report, it was almost unnecessary to say one word, but at the same time it was perhaps desirable that they should express their satisfaction, as Shareholders, at the success which had attended the operations of the Company in these times of general depression. They ought particularly, he thought, to endorse the policy of the Directors in not having commenced their new works in the face of the agitation which had been going on in connection with the threatened utilization of the electric light.

Mr. Rymer said it was due to the Directors that the Shareholders should express their sympathy with them, seeing that the past half year had been one of extraordinary anxiety to them. He asked the Chairman if there was any probability of a further call being made on the new shares, to defray the cost of piling the ground they had acquired on the Foss Islands. Referring to the electric light scare, he pointed out that gas shares were now rising in the market. The shares of The Gaslight and Coke Company, which had gone down to £142, were now quoted at £184, being an increase of £42; the Imperial Continental Gas Association shares, which went down to £140, were now up to £174; and the London Gas Company's shares, which were as low as £145, were sold at £184½, being an increase of £39½.

The Chairman stated that there would be no call at present on the new shares, the first call being sufficient to defray all the expenses they intended to incur.

The report was then adopted, and a resolution confirming the dividend as declared was passed.

Mr. J. R. Hill proposed a vote of thanks to the Directors for their valuable services during the past half year, and complimented them on the excellent way in which the business of the Company had been conducted.

Mr. W. Phillips seconded this, and the Chairman having returned thanks, the meeting terminated.

THE GASLIGHT AND COKE COMPANY.

The Half-Yearly Ordinary General Meeting of the Proprietors of this Company was held at the Offices, Horseferry Road, Westminster, on Friday last—The Hon. Richard Howe Browne, the Governor, in the chair.

The Secretary (Mr. J. O. Phillips) read the advertisement convening the meeting, and the corporate seal was affixed to the register.

In answer to a question, the Governor stated that there were 8300 Shareholders in the Company.

The minutes of the last meeting having been read and confirmed, the following report and statement of accounts were submitted:—

The Directors herewith place before the Proprietors audited accounts of the working of the Company for the half year which ended on the 31st of December last.

During the period which the accounts cover, the general depression of trade has been almost unparalleled. It is, therefore, not surprising to find that, although the accounts are, as a whole, of a highly satisfactory character, yet in some branches of the Company's business there is exhibited a decided falling off of revenue. Temporary difficulties have been experienced in dealing with the sale of coke and tar, and the returns of profits from these two sources must be regarded as not in fair proportion to those obtained from the sale of gas during the same period, for it will be observed that, notwithstanding the condition of trade, the normal increase in the consumption of gas in the Company's district has been more than maintained.

The subject which at the present time no doubt engages the especial attention of the Proprietors is that of the electric light. The Directors have never looked upon it with indifference, but they repeat their assertion, that they regard it without apprehension. The results of a series of experiments which have been conducted at the Horseferry Road, for the purpose of determining the relative cost of electric and gas light, are embodied in a pamphlet which accompanies this report [This appeared in last week's Journal, p. 195]; and amply justify the Directors in the opinion they have always entertained in favour of the latter. In furtherance, therefore, of their views, the Directors have undertaken to demonstrate, at the expense of the Company, methods of improved street lighting, which they believe will show that any given amount of light can be produced by gas at a cost materially smaller than that required to maintain the same degree of illumination by means of electricity, should the public demand more light than at present, and the Authorities be willing to pay for it.

Apart from the question of lighting, the Directors are of opinion that a large outlet for the additional consumption of gas, by day as well as by night, is to be found in the encouragement of the use of apparatus, hitherto in limited demand only, for cooking, warming, and ventilating, as well as for providing a motive power more economical and more convenient for many purposes than that of steam; and with this view they have introduced a Bill into Parliament, seeking for powers to apply their capital to the purchase or manufacture of such engines and apparatus, which they propose to sell or let on hire.

Besides gas and coke, numerous other products, obtainable by the distillation of coal, are daily rising into increased commercial importance. The plant and machinery now being erected by the Company at Beckton, for the working up of these other products, are approaching completion, and the Directors will shortly be in a position to commence some of those manufactures from tar and ammoniacal liquor, which promise eventually a substantial addition to the profits arising from the sale of gas and coke.

The policy of amalgamation which has been adopted by this Company is being steadily pursued, and the Directors have reason to hope that its further development will not be long delayed.

The Directors are proceeding with land purchases at Beckton, in pursuance of the powers conferred upon them by their Act of 1876, and they are also pushing forward, at several stations, the erection of new gasholders and other gas plant required before the commencement of another winter.

These operations will shortly render it necessary to raise further capital, which (as regards shares) the Directors remind the Proprietors can now only be effected in accordance with the auction clauses in the Act of 1876.

Although the Directors, on Jan. 1, 1877, reduced the price of gas below their authorized initial point, they have hitherto thought it prudent to add to the reserve-fund the whole amount by which they were entitled, under the parliamentary sliding scale, to increase the dividend; but the result of the last year's working, and the present financial position of the Company, warrant them in now recommending a dividend for the past half year of £5 10s. per £100 of ordinary stock, making (with the dividend declared for the first half of the year) 10½ per cent. for the year 1878.

No. 1.—STATEMENT OF STOCK AND SHARE CAPITAL, *on Dec.* 31, 1878.

Acts of Parliament relating to the raising of Capital.	Description of Capital.	Standard Dividend.	Number of Shares issued.	Nominal Amount of Shares.	Called up per Share.	Total paid up.	Arrears of Calls.	Remaining to be called up and unissued.	Total Amount authorized.
									£
The Gaslight and Coke Company's Act, 1868	A Ordinary stock	10 per cent.	..	..	..	£1,539,960	..	..	
	A Preference convertible stock, 1st issue	5 ,,	..	..	..	2,080	..	..	
	Ditto, 2nd issue	Ditto.	..	..	..	2,270	..	..	1,550,000
	A Preference convertible shares, 3rd issue	Ditto.	569	£10	£10	5,690	..	..	
The Gaslight and Coke Company's Act, 1872	Ditto, 4th issue	Ditto.	50,000	10	10	500,000	..	..	
	Ditto, 5th issue	Ditto.	50,000	10	8	400,000	..	£100,000	1,000,000
The Victoria Docks Gas Act, 1857	A Ordinary stock	10 per cent.	..	..	..	100,000	..	..	100,000
The City of London Gas Company's Act, 1859	A ,, ,,	Ditto.	..	..	..	300,000	..	..	
	B Stock	4 per cent.	..	..	..	100,000	..	..	400,000
The Companies Act, 1862, as applied to the Western Gaslight Company, Limited	A Ordinary stock	10 ,,	..	..	..	600,000	..	..	600,000
The Imperial Gas Act, 1854	A ,, ,,	Ditto.	..	..	..	1,560,000	..	..	1,560,000
The Great Central Gas Consumers Act, 1851	C Preference stock	Ditto.	..	..	..	200,000	..	..	200,000
The Equitable Gaslight Company's Act, 1842	D ,, ,,	Ditto.	..	..	..	300,000	..	..	300,000
The Independent Gaslight and Coke Co.'s Act, 1864	E ,, ,,	Ditto.	..	..	..	165,000	..	..	
	F ,, ,,	5 per cent.	..	..	..	30,000	..	..	255,000
	G ,, ,,	7½ ,,	..	..	..	60,000	..	..	
The Imperial Gas Act, 1866	H Stock	7 ,,	..	..	..	325,000	..	..	325,000
The Imperial Gas Act, 1869	Ditto	Ditto.	..	..	..	975,000	..	..	975,000
The Gaslight and Coke Company Act, 1876	..	10 per cent.	..	..	..	..	..	1,000,000	1,000,000
						£7,165,000	..	£1,100,000	£8,265,000

No. 2.—STATEMENT OF LOAN CAPITAL.

Acts of Parliament authorizing the Loan Capital.	Total Amount authorized.	Description of Loan.	Rates per Cent. of Interest. 4 per Cent.	4½ per Cent.	4¼ per Cent.	4½ per Cent.	10 per Cent.	Total Amount borrowed.	Remaining to be borrowed.
The Gaslight and Coke Company's Act, 1868	£462,500	Debentures.	£7,300	£20,000	£110,000	£361,850	..	£1,561,500	..
The City of London Gas Company's Act, 1859	60,000	Debenture stock.	617,000	..	50,000	265,350	..		
The Great Central Gas Consumers Act, 1851	66,000	Bonds for capitalized profits.	..	..	..	..	£130,000		
The Victoria Docks Gas Act, 1857	25,000								
The Companies Act, 1862, as applied to the Western Gaslight Company, Limited	200,000								
The Imperial Gas Act, 1854	173,000								
The Imperial Gas Act, 1866	81,250								
The Imperial Gas Act, 1869	243,750								
The Gaslight and Coke Company's Act, 1872	250,000								
The Gaslight and Coke Company Act, 1876	1,000,000	..	..	..	..	..	..	..	1,000,000
	£2,561,500		£624,300	£20,000	£160,000	£627,200	£130,000	£1,561,500	£1,000,000

No. 3.—CAPITAL ACCOUNT.

Dr. Cr.

	Expended this Half Year.	Total Expenditure to Dec. 31, 1878.		Receipts to June 30, 1878.	Received since that date.	Total Receipts to Dec. 31, 1878.
	£ s. d.	£ s. d.		£ s. d.	£ s. d.	£ s. d.
To Expenditure to June 30, 1878	..	8,171,050 3 6	By A Ordinary stock	4,096,300 0 0		4,099,960 0 0
Expenditure during half year to Dec. 31, 1878—viz.:			A 5 per cent. preference convertible stock	*2,140 0 0	..	2,080 0 0
Lands acquired, including law charges	27,515 13 0		A 5 per cent. preference convertible stock, 2nd issue	*2,410 0 0	..	2,270 0 0
Buildings and machinery in extension of works	154,085 1 2		A 5 per cent. preference shares, 3rd issue	*9,150 0 0	..	5,690 0 0
New and additional mains and service-pipes	67,203 2 4		A 5 per cent. preference shares, 4th issue	500,000 0 0	..	500,000 0 0
New and additional meters	5,227 10 3		A 5 per cent. preference shares, 5th issue	300,000 0 0	100,000 0 0	400,000 0 0
	£254,031 6 9		B 4 per cent. maximum stock	100,000 0 0	..	100,000 0 0
Cr.			C 10 per cent. preference stock	200,000 0 0	..	200,000 0 0
By Sale of surplus land	500 0 0		D 10 ,, ,, ,,	300,000 0 0	..	300,000 0 0
		253,531 6 9	E 10 ,, ,, ,,	165,000 0 0	..	165,000 0 0
			F 5 ,, ,, ,,	30,000 0 0	..	30,000 0 0
			G 7½ ,, ,, ,,	60,000 0 0	..	60,000 0 0
			H 7 per cent. maximum stock	1,300,000 0 0	..	1,300,000 0 0
			Debentures	†509,150 0 0		499,150 0 0
			Debenture stock, 4¼ per cent.	265,350 0 0	..	265,350 0 0
			,, ,, 4½ ,,	50,000 0 0	..	50,000 0 0
			,, ,, 4 ,,	†607,000 0 0	..	617,000 0 0
			Bonds for capitalized profits	130,000 0 0	..	130,000 0 0
		8,424,581 10 3		8,626,500 0 0	100,000 0 0	
To Balance of capital account		301,918 9 9	* £3660 of these issues have been converted into ordinary stock during the half year.			
		8,726,500 0 0	† Debentures, amounting to £10,000, have been exchanged for 4 per cent. debenture stock during the half year.			8,726,500 0 0

No. 4.—REVENUE ACCOUNT.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Manufacture of gas—			By Sale of gas—		
Coals, including dues, carriage, unloading, and trimming (see Account No. 9)	435,771 8 3		Common gas, per meter, at 3s. 6d. per 1000 cubic feet	861,907 8 9	
Salaries of Engineers and other Officers at works	7,937 16 8		Cannel gas, per meter, at 4s. 4d. per 1000 cubic feet	50,943 19 11	
Wages (carbonizing)	80,101 19 5		Public lighting and under contracts—		
Purification, including £13,446 4s. 0d. for labour	26,641 12 3		Common gas	60,681 16 4	
Repair and maintenance of works and plant, materials and labour; less received for old materials, £1911 12s. 3d.	145,270 10 10		Cannel gas	4,812 2 11	
		695,723 7 5	(See Statement No. 11)		978,345 7 11
Distribution of gas—			Rental of meters	..	17,736 19 4
Salaries and wages of Officers (including Rental Clerks)	17,800 7 10		Residual products—		
Repair, maintenance, and renewal of mains and service-pipes	35,416 9 9		Coke, less £19,361 12s. 10d. for labour, &c.	134,032 2 2	
Repairs and renewals of meters	13,404 6 3		Breeze, less £1788 4s. 1d. for ditto	2,606 13 5	
		66,621 3 10	Tar, less £358 1s. 0d. for ditto	36,571 2 5	
Public lamps—			Ammoniacal liquor, less £378 19s. 5d. for ditto	56,385 9 8	
Lighting and repairing	..	11,001 7 5			229,595 7 8
Rents, rates, and taxes—			Rents receivable	..	2,694 5 6
Rents payable	5,254 9 11		Transfer fees	..	275 15 0
Rates and taxes	35,829 8 6		Canteen account	..	243 15 4
		41,083 18 5			
Management—					
Directors allowance	3,750 0 0				
Company's Auditors	250 0 0				
Salaries of Secretary, Accountant, and Clerks	5,738 9 5				
Collectors commission	11,691 0 1				
Stationery and printing	2,955 1 8				
General charges	1,826 0 0				
		26,210 11 2			
Law charges	..	2,694 4 6			
Parliamentary charges	..	34 16 2			
Bad debts	..	4,007 0 8			
Depreciation-fund, for works on leasehold lands	..	750 0 0			
Superannuation allowances under amalgamation schemes, and annuities	..	8,357 1 9			
Public officers—					
Gas Referees and Official Auditor	1,319 14 5				
Public testing-stations	167 4 8				
		1,486 19 1			
		857,970 10 5			
Balance carried to net revenue account (No. 5)	..	370,921 0 4			
		1,228,891 10 9			1,223,891 10 9

No. 5.—NET REVENUE ACCOUNT.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
To Interest on debentures, debenture stocks, and bonds, accrued to Dec. 31, 1878	..	36,910 10 0	By Balance from last account	312,388 0 5	
Dividend on A 5 per cent. preference shares and stock	21,501 0 0		Less dividend on ordinary capital for the half year to June 30, 1878	204,815 0 0	
Dividend on B stock, at 4 per cent.	2,000 0 0				107,573 0 5
,, C ,, 10 ,,	10,000 0 0		Revenue account (No. 4)‡	..	370,921 0 4
,, D ,, 10 ,,	15,000 0 0		Interest on money deposited	..	353 1 9
,, E ,, 10 ,,	8,250 0 0				
,, F ,, 5 ,,	750 0 0				
,, G ,, 7½ ,,	2,250 0 0				
,, H ,, 7 ,,	45,500 0 0				
		105,251 0 0			
Balance applicable to dividend on the ordinary stock	..	336,885 12 6			
		479,047 2 6			479,047 2 6

No. 6.—RESERVE-FUND ACCOUNT.

Balance, Dec. 31, 1878	£137,788 1 6	Balance, June 30, 1878	£135,663 19 5
		Interest on amount invested	2,122 2 1
	£137,788 1 6		£137,788 1 6

No. 7.—INSURANCE-FUND ACCOUNT.

Balance, Dec. 31, 1878	£74,259 9 6	Balance, June 30, 1878	£73,112 10 1
		Interest on amount invested	1,146 19 5
	£74,259 9 6		£74,259 9 6

No. 8.—DEPRECIATION-FUND ACCOUNT (FOR WORKS ON LEASEHOLD LANDS).

Balance, Dec. 31, 1878	£11,520 16 8	Balance, June 30, 1878	£10,606 7 3
		Amount brought from revenue account for the half year	750 0 0
		Interest on amount invested	164 9 5
	£11,520 16 8		£11,520 16 8

No. 9.—STATEMENT OF COALS USED, ETC.

Description of Coal.	In Store, June 30, 1878.	Received during Half Year.	Carbonized during Half Year.	Used during Half Year.	In Store, Dec. 31, 1878.
	Tons.	Tons.	Tons.	Tons.	Tons.
Common	60,901	548,146	527,239	331	81,457
Cannel	8,937	44,297	41,001	30	12,203

No. 10.—STATEMENT OF RESIDUAL PRODUCTS.

Description of Residual.	In Store, June 30, 1878.	Made during Half Year.	Used in Manufacture during Half Year.	Sold during Half Year.	In Store, Dec. 31, 1878.
Coke—chaldrons	52,873	529,336	148,144	356,761	77,304
Breeze—chaldrons	841	48,042	..	43,329	5,554
Tar—gallons	1,281,375	6,031,996	..	5,849,064	1,464,307
Ammoniacal liquor—butts of 108 gallons	5,344	162,334	..	151,342	16,336

No. 11.—STATEMENT OF GAS MADE, SOLD, ETC.

Description of Gas.	Quantity Made (part measured).	Quantity Sold.			Quantity used on Works, &c.	Total Quantity accounted for.	Quantity not accounted for.	Number of Public Lamps.
		Public Lights and under Contracts (estimated).	Private Lights (per Meter).	Total Quantity Sold.				
	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	Thousands.	
Common	5,546,251	294,207	4,925,210	5,219,417	68,080	5,287,497	258,754	32,124
Cannel	268,458	17,421	235,126	252,547	1,603	254,150	14,398	3,263

GENERAL BALANCE-SHEET.

	£	s.	d.		£	s.	d.	£	s.	d.
To Capital—				By Cash at bankers	..			58,347	5	10
Balance at credit thereof (Account No. 3)	301,918	9	9	Amount invested—						
Net revenue—				Reduced Three per Cent. Consols	137,788	1	6			
Balance at credit thereof (Account No. 5)	336,885	12	6	Three per Cent. Consols	74,259	9	6			
Reserve-fund account—				New Three per Cent. Consols	11,520	16	8			
Balance at credit thereof (Account No. 6)	137,788	1	6					223,568	7	8
Insurance-fund account—				Stores on hand, viz.—						
Balance at credit thereof (Account No. 7)	74,259	9	6	Coals	79,664	12	5			
Depreciation-fund account—				Coke	17,265	4	0			
Balance at credit thereof (Account No. 8)	11,520	16	8	Tar and ammoniacal liquor	14,518	10	1			
Debenture interest for amount due to Dec. 31, 1878	28,857	1	6	Sundry stores	110,086	1	10			
Bond interest for amount due to ditto	6,500	0	0					221,534	8	4
Preference dividends for amount due to ditto	105,251	0	0	Accounts due to the Company, viz.—						
Unclaimed dividends	5,754	18	7	Gas and meter rental—						
Sundry tradesmen and others, for amount due for coals, stores, and sundries	200,844	19	2	Quarter ending Dec. 31, 1878	705,151	0	11			
Benevolent-fund	1,578	17	8	Arrears outstanding	12,353	16	0			
Call account	48,974	0	0					717,504	16	11
Temporary loan	50,000	0	0	Coke and other residual products	51,995	13	11			
				Sundry accounts	18,154	14	2			
								70,150	8	1
				Retiring allowances	..			19,028	0	0
	1,310,133	6	10					1,310,133	6	10

The GOVERNOR: Ladies and gentlemen, I rise now for the purpose of moving the reception and adoption of the report which has been circulated amongst you, together with the statement of accounts, which has been in your hands the usual length of time for your consideration; and I am sure, with your usual business habits, you have looked into them very minutely. Gentlemen, although I observe with regret the absence from the present meeting of several Proprietors who have, in former days, greeted the Board of Directors here, but who have been induced by rumours, totally groundless as far as this Company is concerned, to sell their shares and their interest in this Company—much as I regret this circumstance, I cannot help congratulating you all on the prospects of the Company, and also congratulating those new Proprietors who appear here for the first time, for the courage and good sense they have displayed in placing their money in so sound and stable an investment. I should have been astonished, indeed, if I did not see before me to-day such a very large assemblage of Proprietors—much larger than I have ever had the honour of addressing since I have been connected with the Company. When we consider the vast fluctuations which have occurred in the value of our stock, the extraordinary circumstances which have taken place since we had last the pleasure of meeting you here, I cannot be surprised that some little mistrust may have pervaded the minds of the timid, and may have actuated them in wishing to hear a fuller statement of the affairs of this great Company; and I hope, before I sit down to-day, that I shall be able to satisfy every one of you that you have acted rightly and prudently in adopting the course you have done in sticking to the Company. Now, gentlemen, the first paragraph of our report alludes to the accounts which we have placed before you; and I think, when we consider the very great depression in trade of all kinds, throughout not only this kingdom but the whole of Europe, with the exception, I believe, of France, I hope you will admit that our account to you to-day is a most satisfactory one. The depression in trade, in London particularly, has been very great, and in our case it is shown more especially in the very heavy loss we have sustained on the sale of our principal residual products, which include tar, primarily, and coke. The ammoniacal liquor has increased little in value in the period of which I am speaking. But it will be observed that during the past half year we have lost by the sale of coke £21,000, and by the sale of tar £14,466; making a total loss on the half year of £35,600, or an amount equivalent to more than 1 per cent. on your dividends. If these articles had been sold at the normal price, our accounts would have presented a much more flourishing appearance; still, considering all things, the Directors are more than pleased with the results of the half year's working. I will now give you a few of the details of that work, as I have been accustomed to do on former occasions. In the matter of coal, we have carbonized the extraordinary quantity of 568,240 tons. This is a larger quantity than we have ever carbonized in one half year. We show in the receipts from consumers, and from the gas made, that this coal has well repaid us. There has, however, been a great depreciation in coke. The net cost of our coal was 6s. 5d. per ton last year, and although the coal itself is cheaper, the cost of coal for the present half year, owing to the loss we have sustained by the other residuals, is brought up to 7s. 3·8d. per ton, which is a very large increase in price, when you consider the enormous amount we have carbonized. With regard to the internal working of the Company, the manufacture of gas has been extremely satisfactory, and it shows an increase for the year 1878 over 1877, during the December half year, of 9·78 per cent. This is the largest increase that has ever taken place in the Company since I have had the honour of being connected with it. This is highly satisfactory; but what is still more so is that the increase continues, and that the returns we have had up to the present time show such an increase in the sale of gas as, I think, almost justifies me in saying that at the next meeting we shall have quite as good a return, if not a better one, to make to you. Our loss of gas through leakage and other sources is extremely small. I have a return here from our Chief Inspector, which was made at my request. After going into other matters, he states that before we amalgamated with other Companies—commencing with the City of London and the Great Central Companies, and going down to the time when we amalgamated with the Imperial Company—that before that period our loss from gas unaccounted-for was 17½ per cent. During the years 1877 and 1878 our loss has been, for common gas, 5·63; for cannel gas, 3·34. In the latter quarter of last year (embraced in this account) our unaccounted-for gas diminished to 3·72 for common gas. Now, gentlemen, I think this will bear comparison with the working of any company in existence, considering the length of mains that we employ, and the enormous number of meters and services that are requisite to the carrying on of our trade. I attribute this in a great measure to the periodical examination of meters which, since we amalgamated with the Imperial Company three years ago, we have established in this Company. All the meters, whether good or bad, complained of or uncomplained of, undergo a strict examination by our Inspectors once in every three years, and the Chief Inspector reports to me now that at the end of the first three years our meters are practically correct according to the Sales of Gas Act, 1859. This is extremely satisfactory, and reflects the greatest possible credit on our inspectors, who have this duty in their hands. Now, gentlemen, having dismissed the accounts and the working of the Company, I hope to your satisfaction, I dare say you will expect to hear from me a few words on that all-absorbing topic—the electric light; and although the pamphlet which we have circulated amongst the Proprietors, and which, I am quite sure, has been read with the very great attention that it deserves, fully details to you the mechanical part, and gives you the result of the experiments which we have tried in this room, and likewise gives you the comparison in the minds of this Committee, and which was approved of by the Court of Directors, of the relative cost of the electric light and lighting by gas, still I dare say you will expect a little more. I do not mean, however, to enter into the mechanical or into the chemical process. My object this morning will be to adduce certain arguments against the probability of electricity becoming, in any way, an adversary of gas; and I shall give you the reasons in a very few words. In the first place, its cost has been pretty well recognized. It is rather pleasing that the result arrived at by our own Committee, as to the cost of the two articles, very nearly coincides with that arrived at in other and far distant places. I will take, for instance, Paris, where the light has been used, to my knowledge, for fully 18 months. It appears that the other day the Jablochkoff Electric Light Company there applied to the Municipality for an extension of their term of lighting certain parts of Paris. Very great opposition was made to that proposal by several of the members of the Municipality, and particularly by a gentleman whose name will be quite sufficient to guarantee his having as good an opinion on the point as any man in France—I mean M. Mallet. He opposed it mainly on this ground of its very great expense. Well, the Electric Light Company, rather than lose the advertisement which they have been enjoying in Paris for so long a period, at a very great loss to the Municipality of Paris, have agreed to light certain parts of the

City at the same cost at which the Paris Gas Company had supplied their light before the introduction of electricity, and they have acceded to terms which, it is admitted on all sides, will be a very severe loss to the Electric Light Company. They will lose at least three-fourths of the amount which they charged before; and although, curiously enough, the gas for the public lighting in Paris is provided at a much lower rate than is charged to the general consumer, that rule is not at all maintained in this country, where we are obliged to supply the public lights for comparatively the same price that we charge private consumers. However, the Municipality of Paris have agreed to go on for one year longer at this reduced price; but, at the same time, they have allowed the Gas Company, who are entirely bound up, as you know, with the finances of the Municipality of Paris, to do as we have done here—that is to say, introduce a superior description of gas lighting, by which experiment I have not the slightest doubt that they will prove to the Municipality—as we have proved here most incontestably—that we can give, light for light, the same amount of illumination at a considerably less price than the electric light companies, or any patrons of electricity pretend to do; and I think the Gas Company in Paris will substantiate that fact, and the whole thing will very soon be reversed. Now, gentlemen, I have referred to Paris, where, according to their own statement, the cost of gas, as compared with electricity—that is to say, of the gas supplied to the public consumers—is three-fourths less, or, in other words, lighting by electricity in Paris is proved to be four times the cost of gas, if the gas were charged for at the London price; and, therefore, it comes out that the electric light costs only double what the gas does. That exactly coincides with the conclusion come to in the report I have alluded to from our Engineers. Then I come to an experiment which was tried, and most admirably tried, under two very eminent Engineers at Westgate-on-Sea. The relative cost of gas and electricity, as there proved incontestably, is five times the amount charged for gas; that is to say, they had to pay at Westgate for the light they obtained by electricity, five times the sum for which they could have obtained an equivalent amount of gas lighting. As far as our own experiment goes, I think it will be allowed—and it has been allowed on all hands—that it was as fairly and justly carried out as anything could possibly be. I was joked about it, and it was said, "Oh, this is a gas manufactory; and it is a queer place to try electricity;" but it had every chance here, as the report tells you, and I think that the report is extremely lenient towards the electric light. It gives it every advantage, and it has been observed to me, by scientific men, in connection with this Company, whom I brought here, that it was the only experiment in which they had properly seen the electric light. It was more continuous—the light was less flickering—and, as far as electric lighting could go, it was as good as it could be produced. Now, gentlemen, as to the applicability of electricity for lighting, either in houses, halls, or other places, and particularly for street lighting, I will just give you a few facts, which, I think, will prove to your minds that it is not the very great thing that it is held out to be. In the first place, gentlemen, they have not yet succeeded, and cannot succeed in rendering the light free from sudden extinction. It was stated the other day in Paris, at the meeting to which I have alluded, that the extinction of the lamps—six in number—in front of what used to be the Chamber of Deputies, had gone on increasing from 1 up to 20. So far, therefore, from having improved by experience, the electric light has, on the whole, rather gone backward, and I think M. Mallet has stated, that within the last eight months it has gone out several hundred times. Our own experience may, perhaps, be better relied upon than that of others in foreign parts. I requested our Chief Inspector to give us a detailed report as to the working of the electric light, as an illuminant for streets and public thoroughfares in London. Now, you are all very well aware that it has been for some time tried upon the Thames Embankment, on the Holborn Viaduct, and also at a very appropriate place—Billingsgate Market. I will read you the results our Chief Inspector has furnished me with. In regard to the Holborn Viaduct, his remark is, "On Dec. 24, 1878—Foggy; electric lights inadequate; eight gas-lamps lighted to supply the place of the electric;" because it is a well-known fact that in a fog the illuminating power of electricity is *nil*—you cannot see it. "On the 5th of January, one section went out at 11 p.m. On the 10th, breakdown of engine; out from 5.15 to 8 p.m. The gas man had to light the whole of the gas-lamps. On the 11th, went out suddenly at 5.15 p.m." On the 14th, and on the 16th, 17th, 22nd, and 28th of the same month, the electric light failed in what it promised; instead of maintaining a continuous light on these occasions, it went out. But surely there must have been something extraordinary as to the locality, or otherwise, of the Holborn Viaduct. Now we will go to the Thames Embankment—a free, open space, with nothing to interfere with it. On the Victoria Embankment, on the 26th of December, "Engine broke down; out this night. Accident by wind; globes blown off," and so on. In several other instances, the light on the Thames Embankment has been extremely unequal, flickering, and has not at all given satisfaction either to its principal promoters or to the public in general. Now, gentlemen, we come to two more places, one of which is Billingsgate Market. This is rather interesting, because those who live in London must have known some of the scenes that have taken place there. There are no fishwives there at the present moment, or I dare say they would have complained; but the fish salesmen complained most bitterly. They declared, in the first place, that they missed the warmth of gas in winter mornings, and, in the next place, that it had the extraordinary effect of changing mackerel into whiting. Well, this proves, I think, that it has some extraordinary effect upon colour, which is denied by its promoters. However, on the 17th of December, it "went out suddenly at 6.25 a.m.; all gas lighted. On the 24th, not lighted until 4.40 a.m.; all gas lighted. On Jan. 8, 1879, it went out at 6.10 a.m.; all gas lighted. On the 14th, out for five minutes. On the 27th, went out suddenly; all gas lighted." So on on the 27th, and 28th, and 29th, and all in the same words—"Went out at eight, went out at nine; all the gas lighted." Then comes the climax. On Jan. 30 it was discontinued. The light has also been tried, I believe, at the Liverpool Street station of the Great Eastern Railway. It has been in use there for a short time, and, I believe, has given general dissatisfaction. The report of our Inspector says: "Continually changes colour; oscillation bad throughout; gas-lamps always lighted as usual." Now, gentlemen, I think he would be a very courageous man, and a very imprudent man, who would entrust the lighting of this great City of London—this vast Metropolis—to an agent which, beyond doubt, in its present condition, is unable to maintain the light which it professes to give, and for which the ratepayers of this Metropolis will have to pay. Just fancy the effect which would be created in London on some occasions by the extinction of the lamps in any particular street. At certain places there are throngs of people, and what is called the rough element is sometimes to be found there. I should not like to trust my watch or my purse in that locality, if the light were to be completely extinguished. Now, as regards domestic use, the same arguments are to be adduced. I think that the great objection is its cost and its want of continuance—in fact, its want of stability. I really think I have said enough on this point, and if you will allow me, I will go to another one which is much more agreeable to me to talk about, and that is the experiments this Company—following the good example of the Phœnix Company on the other side of the water—have made in reference to the improved lighting which can be effected by gas, if the public require it, and if the vestries will open their purses and pay us what it is worth. We have proved that we are able to supply an illuminant in every respect equal to the electric light, and much more agreeable, and, as our report states, at a very much reduced cost. I was reading this morning an account of the introduction of the electric light in the Albert Hall last evening. I was not present, but it was reported to our Court this morning that it gave a very fine light, though there were certain oscillations and inequalities in it which at present cannot be overcome. In the newspaper account, which is a very unfair one to the gas interest, it is stated that the effect of elcctricity over gas was something extraordinary; but it is not stated that it is over the old system of gas lighting that the electric light was so very predominant. We could light the Albert Hall on our new principle, if they chose to pay us for it. We have always admitted that, irrespective of expense, the electric light is a beautiful agent for illuminating purposes, and I certainly know of no place where it could be put up, irrespective of expense, better than the Albert Hall. The next point to which I will allude—and I will take it in its course, to save time at the special meeting which will be held presently—is the Bill which we mean to prosecute, with your consent, for the application of our capital to certain other purposes than those contained in our former Acts, which only enable us to produce gas. We intend to go to Parliament and ask for various powers, such as for the purchase or hiring of gas-stoves, and other appliances. Some complaints have been made that this Bill will compete with private enterprise in that direction. Now, once for all, I tell you, gentlemen, that our object in bringing forward this measure is to encourage, and even to force the extended use of gas as a warming agent, and as an agent for various other purposes. We have not the power of doing that now; but nothing can be farther from our idea than to anticipate a loss to others by what we do ourselves. If we do not make the articles, we shall act somewhat as we now do with meters, which bring our Company a very large revenue from the hiring of them; and the provision now contemplated will be of very great use. There are, however, large numbers of people who do not like to invest their money even in meters, if they can hire them at a moderate rent, and I am sure such persons will be very glad to adopt this course. In regard to the cooking-stoves, in Paris they are used to an enormous extent among the lower classes; and I know, from a gentleman who has inquired into this subject, that they bring in a very large rental to the Paris Gas Company. Our sulphate and tar works at Beckton, I am sorry to say, have been greatly retarded by the late severe weather. There has not been a brick laid for nine consecutive weeks, for no sooner had one frost departed than another came, and rendered it impossible to proceed with these works. However, I am happy to say that within the last few days we have made a start with the sulphate works, and a small quantity has been made within the last week; and we have had to-day, at the Court, a sample which promises that it will be of a very good quality by-and-by. The next point in the report is concerning the amalgamations. I may say that my own opinion, and the one that I have always expressed here, has, looking to past experience, been very much in favour of amalgamations. I have always advocated them, and shall continue to do so; for I think it is always safer to judge of what has resulted from these amalgamations, than to look forward to what may never take place. However, I mentioned at the last meeting that we were in negotiation with other Companies for effecting an amalgamation. Those negotiations, I regret to say, did not come to anything at the time; but I am able to state to the meeting that the Directors had to-day under their consideration a plan of amalgamation with some other London Companies, which I confidently expect will turn out to be a reality. Judging from what amalgamation has done in the past, it will be to the advantage of every single Company to amalgamate, as the value of their stocks will evidence. I trust the next meeting we hold here will be to consider some plan of amalgamation, and the Proprietors may be sure the Directors will enter into nothing without their consent, which the Directors are bound to have. They will not enter upon any scheme which they do not thoroughly believe to be to the Company's advantage. It is explained in the report that we shall require some new capital during the present year, to pay for the works to which we are at present committed—that is, upon contracts which are not yet fulfilled—to the amount of about £100,000, and the remainder will be for the growing requirements which force themselves upon us for the vast increase in the consumption of gas, for which we are obliged to provide a sufficient supply, in order to accommodate the public to the fullest possible extent. As to the mode in which we are to raise that capital, the Proprietors are doubtless aware that we shall be subject to the auction clauses contained in our last Act of Parliament; and, although the Directors are not in a position, at the present moment, to state to you the exact mode, or in what proportion it is to be raised, I hope you will leave the matter in our hands, to deal with as we consider best for the interests of the Company. The last thing I shall refer to is our dividend. You will observe that we shall give you one-half per cent. more this half year than we have ever paid before, and we are induced to do this from what we consider the very firm position of your property, and of its prospects. We have hitherto devoted a portion of our surplus earnings to the reserve-fund; but seeing that that fund, and the other funds which you possess, amount to £300,000, we think the time has arrived when, to use the language of many who have spoken upon this subject, we intend to make the sliding scale a reality. By that sliding scale we are entitled, for every penny we reduce the price of gas from the initial price, to divide 5s. per cent. over the usual statutory 10 per cent. dividend. On the present occasion we have not exercised that power to the full. We have only raised the dividend as if we had the power to pay 10s. per cent more. We really have power to declare 15s. per cent., but we think it wiser to commence at 10s., and I hope, when I have the pleasure of putting the motion to you in reference to declaring that dividend, that I shall have your complete concurrence in the policy adopted by the Directors. Gentlemen, I beg to move—"That this meeting do agree with, and confirm the report of the Directors, and the Auditors report and statements of the accounts of the Company, which have been transmitted."

The Deputy-Governor (Mr. E. Vaughan Richards, Q.C.) seconded the motion.

Mr. Baddeley: After what we have seen during the past six months, I think the Shareholders and Directors may congratulate themselves on having not only a name, but a local habitation; and that is distinctly shown in the vast amount of increase of rental which these accounts present. I believe I am right in stating that the increase during the six months is no less than £95,000. However, there is one remark of the Governor's I do not agree with, and that is with reference to the timid Shareholders. If those gentlemen who held shares in the Company had not sufficient courage to continue to be Shareholders, I prefer their absence on this occasion; because any one can feel that in a concern like this, having so many Proprietors, an amount of damage would be done by 20 or 30 timid Shareholders, who not only depreciate their own property, but

also ours. I say we are better without them at this meeting; and I do not regret their absence at all. With regard to increased gas illumination, I think the Shareholders ought to be deeply indebted to the Directors for the course they have adopted. If the Local Authorities wish to properly light the streets, the Gas Companies are prepared to light them; but it is not with the Local Authorities so much a question of the amount of illumination they shall give to the streets, as the amount of illumination that they will be able to obtain at a very low cost. Gentlemen connected with the Corporation might as well expect a basin of turtle at the price of mock as to ask a gas illumination for the City of London to the extent of the electric light, without paying for it as much as the cost of the electric light. There is one item in the accounts which I will call special attention to, and that is the question of rates and taxes. I find for this half year no less a sum than £5000 of increase in rates and taxes alone levied upon this Company. For the last half year it was £27,000; this half year it is £35,000. That is something like £70,000 a year in rates and taxes; but this is not all. I look to another item in the accounts, and I find that, during the past six months, 568,240 tons of coal have been consumed; and when we remember that every ton of coal that comes into the City of London has a tax of 1s. 1d. levied on it, which goes into the coffers of the City Authorities, I think the Corporation of London have a very deep interest in the prosperity of the gas companies, when they take from this Company in one year a sum of something like £60,000. I asked a question with reference to the number of Shareholders, and my object in doing that was to ascertain how far the number of transfers that had taken place during the past six months justified the quotations on the Stock Exchange. Notwithstanding that we have 8300 Shareholders, only 464 transfers, as I make out, were actually recorded in the office. Now, those do not represent 464 Shareholders, because we know the transfers would come in in small quantities, and might probably be the result of the operations of only 50 Shareholders. One word upon the question of dividend. You propose to give us 5½ per cent. this half year; but you omitted to state whether you intend it to be free of income-tax. In another Company of which I am a Shareholder, they generally pay our income-tax for us, although they are paying more than 10 per cent.; and they find it more convenient to do so, because in calculating the dividend for such a number as 8300 Shareholders, it takes up the time of the office. It would be a much easier matter for you to pay it for us. I have shown, I think, on this occasion, that I am not a timid Shareholder, by addressing so large a meeting as this, and by having the audacity to ask even the smallest favour at the hands of the Board.

Sir MORDAUNT WELLS said that one thing had resulted from the electric light—namely, that the eyes of shareholders who had not hitherto taken an interest in the working of gas companies, had been opened by the events which had occurred lately. The full attendance of members on the present occasion testified to the warm interest the Shareholders took in the working of the Company of which they were members. He thought that the Chartered Company, and all other Gas Companies, had not been fairly treated by the public bodies in the Metropolis. Although the Directors had acted in a dignified manner in not condescending, in the report or through their Chairman, to answer complaints which had been made against gas companies, nevertheless he wished, as a Shareholder, to vindicate their conduct in reference to the lighting of the Metropolis. It was known to the public bodies months ago that, by an increase in the illuminating power of gas, the streets might be as well lighted as by electricity, and with that knowledge they ignored altogether the power of the Gas Companies to give that increased light, and did not give the Companies the opportunity of doing that which they had recently done—namely, satisfying all reasonable men that the Metropolis could be illuminated by gas as well, and as sufficiently as by the electric light. The consequence was that a scare had taken place in the value of gas shares, and many Shareholders had become frightened; but he advised all his friends to remain firm in their holdings, although many of them did not take his advice. He would caution the Shareholders not to press the Directors to give to the public bodies an increased illuminating power without obtaining a consideration for it. Such a course would be exceedingly unjust towards the Company as a commercial undertaking. Every foot of gas consumed in illuminating the streets of London ought, he thought, to be paid for exactly in the same manner as that sold to any individual, because it was for the welfare and comfort and convenience of the trade of the Metropolis that there should be good illuminating power; and if the public bodies were prepared to pay for it, the Gas Companies would give it. Speaking of the accounts, he did not feel, after the most careful investigation, that they were altogether satisfactory. There was a paragraph in the report which expressed the intention of carrying on to a greater extent the principle of amalgamation, which ought to be well considered. So far as amalgamation had taken place on the part of the Company, it had, no doubt, worked well; but if there were any attempt to amalgamate with the Southern Companies, they would get into a difficulty which no one could understand except those who had watched events in Parliament during the last five years. In the south there was a lower initial price for gas than in the north, and the Northern Companies would have to level down to the lower price. Parliament would never consent to an amalgamation under other circumstances. There was another item in the report which he had never seen in the report of any other company. In the first page of the accounts there was an item "Superannuation allowances under amalgamation schemes, £8357" a year in addition to £19,000.

The GOVERNOR: Oh, no.

Sir MORDAUNT WELLS said the accounts would speak for themselves. Almost the largest commercial company in this country was the North-Eastern Railway. They had capital to the amount of between 60 and 70 millions; and had the most complicated system in the country. They had for Directors the ablest men in the North of England, and these gentlemen had an amount of work to do which one could scarcely understand, unless he had the opportunity of going through the accounts; yet they received the same amount as the Directors of The Gaslight and Coke Company. He would, therefore, say most respectfully to the Directors, that although he did not wish to see any gentleman on the Board deprived of one single farthing of the emolument which he received, he hoped that when vacancies occurred they would not be filled up. If any attempt was made, under any Amalgamation Bill which might be brought before Parliament, to introduce the vicious system of paying out the old Directors, he would oppose it to the last, and he would ask the Shareholders to do the same. The policy of amalgamation was for the benefit of the public, and it was not right that bargains should be made with individuals; and he held that this sum of £19,000 never ought to have appeared in the accounts. He felt that the sum of £7000 a year for the Directors, as compared with that received by other Directors, was a very large one indeed. He liked men to be well paid, but there was no necessity for so many Directors on the Board. He would advise that in the event of vacancies occurring they should not be filled up, although at present he should not wish to see a single Director displaced.

Dr. BEATTIE said he differed from the last speaker in his statement that the Directors were overpaid. He would also point out that much of the coal consumed was not brought to the City of London, and, of course, there was no tax incurred upon it. He was under the impression that the Company contracted for the sale of tar, and he wished to know when the contract expired. As regards the loss sustained by the sale of coke, there had been a very severe and prolonged winter, and he was in hopes that the Company had gained by it. He wished to know also how long the Directors intended to continue the lighting of Waterloo Place gratuitously.

The GOVERNOR: For a couple of months or so.

Dr. BEATTIE said that what he felt most strongly upon was that the Company had entered upon what he considered to be a speculative commercial transaction in the erection at Beckton of their works for the distillation of tar. So far from that being a profitable concern, he believed it would be the reverse, and that the amount which would have to be spent here for the erection of those works would far exceed anything that had been contemplated. He should like to know the estimated amount to be paid for the construction of the works. They were not now in a position to distil, by reason of the severe frost that had retarded their operations; and he would predict that, instead of the works being a profit, they would be a loss. The Company intended to go to Parliament for powers for the manufacture of gas-engines and stoves; but surely that was quite foreign to the work of a gas company. He also wished to ask if the reserve and insurance funds were invested outside the Company.

The GOVERNOR: If you will read the accounts, you will see where the investments are.

Dr. BEATTIE said that what he complained of was that the Directors had not given the expense of the construction of these works separately from the gas-works. In reference to the electric light, although he believed it could not be brought into use in private houses, there was no doubt that for large railway stations, such as those of the Midland and other companies, it would be employed. Some reflectors had been made, which would, he believed, render the electric light most beautiful and serviceable.

Mr. G. LIVESEY said Sir Mordaunt Wells had shown them a remarkable instance of the gratitude of Shareholders. They were there as Chartered Shareholders, and it was hardly the thing for any Shareholder to stand up and denounce amalgamation, considering it had made the Company what it was. He thought the Directors, who had pursued that policy with such success, might be trusted to continue it for the benefit of the Company. There was one mistake Sir Mordaunt Wells had made with reference to the application to Parliament. Amalgamations now being negotiated would require no application whatever to Parliament. With reference to the sliding scale, some four years ago he ventured to recommend it; but his recommendation was not very cordially received, although, he believed, the Governor of the Company had always been in favour of the principle. In 1875 he (Mr. Livesey) gave evidence in favour of it, and certainly, from some quarters, he had received some rather hard knocks, and been called rather hard names; however, he was perfectly satisfied that so great a Company as the Chartered, who, in 1876, adopted it, would make the sliding scale a reality. He believed that the Shareholders had a right to the increased dividend. Of course, the first thing to be done was to make sure the dividend would be maintained. So long as there was a sufficient reserve, he thought they were entitled to the greater dividend. With regard to Mr. Baddeley's remarks in reference to the income-tax, he thought that the legal system of deducting it should be followed, as in all other companies. With reference to the statement of the Governor as to the coke, he thought the Shareholders had received a rather dispiriting account of the state of the market for the sale of products. He would remind them that coal was very cheap at the present time. Their coal, including cannel, had cost 15s. 4d. per ton. This was down to the old prices of seven years ago, and it would be found that coke was now realizing about the same price as it did at that time; therefore there was nothing to complain of. With reference to the electric light, he thought they were all indebted to Mr. Sugg for his ingenuity. What he had done in this matter, and what he had done with regard to gas-burners, had given a tremendous lift to gas companies. His own course had from the first been to ignore the electric light. They must leave it to find its level, because it would not hurt the gas companies. The only thing it had done was to give the public an insight into what might be effected with gas, in reference to extending its use for heating and other purposes. In the matter of the auction clauses, which, as a Shareholder, he did not like, if the sliding scale had been adopted when he recommended it, those clauses would not have been in existence. With the auction clauses, they had derived very little benefit indeed from the increase of business. The only advantage he could see they had obtained was that it would enable them, to a small extent, to reduce the price of gas, and, in consequence, to divide a somewhat higher dividend. He believed that the Company would go on and prosper, and that in a year or two they would be the leading Company in the world, dividing 12 per cent.

Mr. WHITWORTH said there was one paragraph in the report to which he should like to call attention. It was stated that, in a short time, additional capital had to be obtained. This was the first time it had to be raised under the auction clauses, and he would point out that the Company were in a much worse position to issue it now than they were in 1876. At that time the shares of the Company stood at £220 in the market; but the previous day they stood at £185. He believed that so long as the Company's shares were at their present price, it would be little, if any, advantage to the Shareholders if the capital were increased. Without asking the Directors to pledge themselves to any mode of issue, or to the time at which they should issue, he would ask them to look ahead, and when they found the market favourable, to take advantage of it, and issue the shares at a good price, and not at what they would have been issued at three months ago, when they were standing at £140. If an attempt had been made at that time to raise capital, it would have been a decided failure. Previous to 1866, it was a matter of indifference to the Company at what price the shares were issued. If they were issued at low prices, the individual members of the Company had the benefit of the rise in the value of the shares; if, on the other hand, they were issued at a high price, there was less working capital to go upon. But he maintained that at the present time it would be wrong to issue shares, unless at a high price, and he suggested whether it would not be possible to have a sort of reserve-fund for increasing the business capital. He should like the Directors to fix upon a price at which they would issue. They should take advice on the subject, and say that under no circumstances would they issue capital to the public under a fixed sum; and if, by reason of panic or any other circumstances, it was necessary to have power to raise money and issue shares at the lower rate, might resort to temporary loans, otherwise they ought to go to Parliament to have the auction clauses altered.

Mr. SHARPE spoke in favour of the use of gas for domestic purposes. He had employed it in his own house, where he had only one coal fire. He had gas fires in his drawing-room, dining-room, bed-room, and sitting-room, and the advantage derived from them was beyond description. Some people complained that there was an effluvium from gas; but if that were the case, it was the fault of those who fitted up the appliances. One advantage was, that there were no ashes or dust, and the heat of the room could at any time be increased or reduced. Another advantage was, that in the case of sickness the temperature of the bed-room could be kept equal

for any length of time. He recommended the Shareholders to use gas for domestic purposes, as there would be a great saving of labour, with increased comfort.

Mr. JACKSON said it would be very desirable to know from proper accounts whether the new works proposed to be undertaken would be really profitable; and he thought it was most desirable that they should be carried on apart from the general capital of the Company. The Company had hitherto been prosperous; but they were not infallible, and it might turn out that these enterprises would not be very successful. They were now receiving an admirable dividend, and they did not want to excite the envy of great public bodies by paying what might be called an exorbitant dividend. Ten and a half per cent. was very satisfactory, but he desired to know whether it was the intention of the Board to keep the accounts separate. In reference to amalgamation, as it had been stated that no agreement would be made until the Shareholders had been consulted as a body, he was quite willing to wait, because there would be time enough to discuss that point hereafter.

Mr. YOOL said, with reference to the remarks made by Sir Mordaunt Wells on the subject of amalgamation, it was due to himself, as an old Shareholder of the Company, and to his friends who were largely interested in it, that he should express his strong desire that the Directors should persevere in the system of amalgamation, which had proved so beneficial to them. He trusted they would go on with the schemes they had before them, and he was sure that whatever terms they agreed to would be such as the Shareholders would approve, and would be as beneficial to them in the future, as the amalgamations that had already taken place had been in the past. A suggestion had been made, and he thought most unadvisedly, that the Directors could raise a large sum of money by temporary loans. He hoped the Shareholders would leave such a question as that entirely to the discretion of the Board, for he felt perfectly satisfied that nothing could be more detrimental to the Company than to have a large floating debt. In the case of a panic, it was a thing that would be dreadful to contemplate, and he was quite sure that the Directors would not listen to such a proposal for a moment. Some questions had been raised on the subject of rates. As a shareholder in gas and railway companies, he had suffered severely from the incidence of rates; and being himself a member of a rating committee, he knew that until the law was altered it was impossible to get any redress. They must wait until Parliament altered the law of rating, which operated so harshly and unfairly on all public companies, before any steps could be taken in the matter. By taking proceedings now, money would only be thrown away. Of the tax of 1s. 1d. on the coal, 4d. went into the funds of the Corporation, and the other 9d. was only imposed for a term which would expire in a few years, and the money received on that account went towards defraying the expense incurred for the Thames Embankment, which had been constructed for the benefit of the Metropolis. He congratulated the Directors and the Shareholders upon the satisfactory report that had been presented, and hoped it would be passed unanimously.

The GOVERNOR: Mr. Baddeley put a question in reference to the transfers that had taken place during the late scare in the share market. I can tell him it rather exceeds what he supposes, and I will give the exact figures; for, thinking such a question would be put to me, I had them made out. In a former period the number of transfers was 1466; during this panic it has been 1943; showing a difference of 477 transfers, which is a very considerable one. The amount transferred has not been very large, considering the extent of our constituency, which numbers upwards of 8300 Shareholders. It is no wonder that the distrust should have been more general amongst so many than it would have been in a small company. As to the payment by us of income-tax, in the way suggested by Mr. Baddeley, he perhaps forgets that the Companies to which he alludes are not under the same Act of Parliament as we are. They have not a gentleman named Parkes to look after them. I can assure you that Mr. Parkes, the Auditor appointed by the Board of Trade, is a shrewd man, and looks well into the accounts. We have not the power to pay income-tax in any form whatever. We must show by our accounts that we are working in strict conformity with the Act of Parliament.

Mr. YOOL: You do it in the best way.

The GOVERNOR: We do; and, moreover, it is in the legal way—we show everything in the accounts. With respect to what fell from Sir Mordaunt Wells, I need only tell him that all charges for gas in this Company are equal to the public and to the private consumer. We are obliged by Act of Parliament to make them so. With regard to what he said as to the question of amalgamation and the charges in the accounts, he is altogether under a misapprehension upon that subject. We have not the power to alter the number of our Board. Perhaps the Secretary will read the clause.

The SECRETARY said that one of the clauses in the last scheme of amalgamation was as follows:—"That from and after the time when the number of the Directors in the United Company has been reduced to 15, the number of such Directors shall not be less than 12, nor more than 15."

The GOVERNOR: You see by this we have no power to fill up vacancies until we get to a certain number. With regard to the amount which Sir Mordaunt Wells says is charged against the Company annually for retiring Directors, he is quite mistaken. There was a certain amount, and it has been paid off half yearly. That £19,000 is the balance of the whole; it is not £19,000 a year, and it will be liquidated altogether in the course of the next two years. There can be no objection to that. Moreover, I would impress upon you one fact—that all this came before you at a special meeting, and you confirmed it. If any opposition was to be made, it should have been made before, and the time of this meeting ought not to be taken up by it now. It is *un fait accompli*, and there is no recalling it. In reply to Dr. Beattie, who asked a question as to the contracts for tar, I may say they run on from year to year, and may be renewed if necessary. As to the lighting of Waterloo Place, it is more as an advertisement than anything else, to show people what we are capable of doing. It will only be continued for a very limited time. With regard to the question put by Mr. Jackson, as to the works now being erected at Beckton, I think it would be very foolish policy for us, who are going into a trade, to let all the world know, by separating the accounts, how we go on. If any gentleman wishes to know the exact amount of the expenditure, well and good; but the honourable proprietor is quite wrong in saying we are going to raise capital to pay for those works. They have been nine-tenths paid for already. That capital we are about to raise will be for works to which we are now committed—for large gasholders, tanks, and very large mains, which we find necessary in order to keep up our supply of gas—and not specially to pay for our new works. As regards what fell from Mr. Whitworth, in reference to the auction clauses, we have no power now to alter those clauses; we must abide by them. I have myself always been in favour of them, and, as Mr. Livesey will remember, at the last meeting when a Bill was before the Proprietors, I, personally, strongly approved both of the sliding scale and of the auction clauses, and I did so approve of the sliding scale because I thought it was good and equitable both for the Proprietors as well as the public. As to the auction clauses, whereas we sell our property at £180 or £190, we have only to pay a dividend on the nominal amount of what we sell. We pay upon £100 only, whereas we get for that sum £180 or £190, and we have the use of the £90 for nothing. It has been suggested that we might sell our shares by auction, at low prices, which we certainly should not do. I asked you in the beginning for power to deal with that question according to our judgment, and according to the nature of the times in which we want to raise the money. The honourable Proprietor is quite wrong in saying that we could raise it by temporary loans. I quite agree with Mr. Yool that such a system introduced into this Company would not stand for a year. I should be sorry to see the Company depend on temporary loans, or anything of the kind. We have not the power, unless we do it on our own responsibility, of pledging the Company to temporary loans, unless we raise the capital under which they are to be effected. It comes under the head of "borrowed capital," and in order to raise that we must borrow an amount of new capital of the Company to enable us to do so. I think I have replied to all the questions. I can only further assure you that the utmost care will be taken in the sale of these shares by auction; and, moreover, I can also assure the Proprietors—which I have previously done in my opening address—that any amalgamation the Directors contemplate will not be carried out until it has their approbation. We only judge from the results that have been obtained from former amalgamations, and we have the confident hope that future ones will turn out as profitable for this Company as they have done hitherto.

Sir MORDAUNT WELLS: I do not wish to be misunderstood. Under your Act you are paying £17,000 a year for superannuation allowances, and, in addition to that, you have £19,000 lent.

The GOVERNOR: No. According to the scheme of the Board of Trade, the retiring allowance, or pension to all the retired officers of the amalgamated Companies is included in that. I now beg to move that this meeting do agree with, and confirm, the report of the Board of Directors, and the Auditors statement of accounts as transmitted.

The motion was put, and carried unanimously.

The dividends mentioned in the report were then, on the motion of the GOVERNOR, agreed to, and the retiring Directors and Auditors re-elected. After this a resolution authorizing the disposal of such further portions of the Company's property as are not now required for the purposes of their undertaking was carried.

The meeting was then made special, and a resolution was submitted approving of the Bill now before Parliament for amending The Gaslight and Coke Company Act, 1876, and for other purposes.

Mr. JACKSON proposed, as an amendment, that, subject to the accounts of receipts and expenditure, in connection with the supply of gas-stoves and fittings, being kept separate, the resolution be carried.

After some conversation, the amendment was allowed to drop, and the resolution was put and carried unanimously.

On the motion of Sir MORDAUNT WELLS, a vote of thanks was accorded to the Governor and Directors for their conduct of the business of the Company during the past half year, which, he said, had been a most anxious one for gas companies generally.

The GOVERNOR having in a few words returned thanks, the proceedings terminated.

SOUTH SHIELDS GAS COMPANY.

A Special Meeting of this Company was held on Friday, the 7th inst.—Mr. R. WALLIS in the chair—for the purpose of considering the provisions of the Bill of the Company, now before Parliament.

The SECRETARY (Mr. J. H. Penney) having read the notice convening the meeting,

The CHAIRMAN said the meeting had been called, in accordance with the parliamentary rule, to consider the provisions of the Bill the Directors had promoted in the present session. The Shareholders would remember that at the last half-yearly meeting it was stated that it would be necessary for the Company to go to Parliament this session, and, consequently, the Directors had framed a Bill which they thought was equally fair to the consumers and the public generally. They were aware that changes had taken place of late years with regard to gas legislation, and some of the clauses in the Bill might appear disadvantageous to the Company. They were, however, such as the Directors felt sure would be forced upon them in committee, and, therefore, they had thought it best to frame such a Bill as was likely to pass without much opposition. Unfortunately, they had been threatened with opposition from three quarters—the Town Councils of South Shields and Jarrow, and the River Tyne Commissioners. The latter opposition, he should imagine, was a mere matter of form. The Company took power by their Bill to erect jetties and crossings on the property which they bought at Jarrow, and the action on the part of the Commissioners was to prevent an infringement of their rights. He hoped, however, that after an interview had been obtained with that body, all opposition would be withdrawn. With respect to the two Corporations, he could not conceive that they seriously intended to oppose the Bill, because it was really a fair and honest one between the Company and the public. The Shields Corporation had already sent a string of questions to the Directors, which they had answered as fully as possible, and to the best of their knowledge; and he believed that any difference existing between the Shields Corporation and the Company would be amicably settled. With respect to Jarrow, the Directors did not know what their opposition was, but he had no doubt that they would be able to satisfy them. The Bill contained some very important clauses, and the Directors would be glad if the Shareholders would express their opinions freely upon them. In the first place, the Bill sought for powers to extend the limits of the Company—that was, to include the parish of Whitburn. They already occupied a small portion of the parish, and, if they went further in this direction, it might be a very important locality for their operations. There was another important clause—namely, the power to produce the electric light. He had no doubt that the Shareholders, as well as the Directors, had been a little scared when they heard of the electric light. There was no doubt something in it, and it would probably be used in connection with large works; but he did not think it would interfere with the profits of gas companies. Gas would continue to be used for lighting as well as heating purposes, and for supplying motive power. The raising of additional capital was another very important matter. In a former Bill they asked that their capital might be doubled, and it was a fact that, during the past ten years, they had progressed at the rate of between 10 and 12 per cent. every year, and he had no doubt they would again double their capital in another ten years. He therefore thought they were only proposing a reasonable thing to be allowed to double their present capital, and to ask that this additional capital should be £80,000. It has now become a usual thing for Parliament to insist upon gas companies selling their shares by auction. Some Shareholders might think this rather hard; but if they looked at the question broadly, it would be seen that, if they did not receive benefit in one way, they would in another, and if it did not go to the individual it would to the Company. Any profits derived from the sale of shares had to go to pay off borrowed money. Then, with regard to the clause respecting the sliding scale, they asked power under the Bill to make their standard price for gas 3s. 6d. per 1000 cubic feet. If they exceeded that price, their dividends would go down; but, if the price was reduced to the consumers, the dividends would be increased, which was only reasonable.

Mr. H. T. DUNCAN said he understood that the works at Jarrow had cost

£35,000, and there was an impression abroad that the Directors had spent that money out of revenue, and not out of capital. He inquired whether any negotiations had been entered into for the purchase of the works at Whitburn, and whether they intended to ask for compulsory power for such purchase. He likewise wished to know what advantage the Whitburn works would be to the Company. Had they also taken into consideration that the Corporation of South Shields had power to purchase the Company's works there at any time by agreement, and, if so, what did they think would be the effect if they had the Jarrow and Whitburn works remaining on their hands?

Mr. Bowman put several questions with respect to the proposed extension to Whitburn, and the Company's works at Jarrow.

The Chairman, in reply, said the Jarrow works had been constructed out of capital, and not out of revenue. No official negotiations had yet been entered into with respect to the Whitburn works. Inquiries had been made as to their value, so as to estimate what advantage their possession would be to the Company. The Directors, however, intended, if necessary, to ask for power to purchase the works compulsorily. The works at Jarrow had been in progress for over two years, and it was quite true that a great deal of money had been spent upon them; but it was equally true that the Company could not have gone on without the assistance of those works, for they had manufactured gas at South Shields, and sent it to Jarrow, to meet the growing demands of South Shields, Hebburn, and Jarrow. With regard to the land at the latter place, it consisted of three acres, and the ground-rent was £150 per annum, but they let off to the amount of £80. If the South Shields Corporation wished to buy the South Shields works, negotiations would have to be entered into; but of course they need not purchase the Jarrow or Whitburn works unless they thought proper. The Jarrow Corporation might, perhaps, purchase the Jarrow works. With regard to Whitburn, he might say that Sunderland had an eye to it; but, of course, they at South Shields were first in the field.

Mr. Forster said great credit was due to the Directors for the manner in which they had prepared the Bill. They were also entitled to commendation for the excellent way they had extended the works.

Mr. Duncan said he would like to take the opinion of the meeting as to the propriety of the Company going to Whitburn, and moved that the power to purchase the undertaking of the Whitburn Gas Company be excluded from the Bill.

Mr. Bowman seconded the motion, which was put and negatived.

On the motion of Mr. Bowman, seconded by Alderman Glover, the clause in the Bill stating that it would be necessary to hold the meetings of the Company half yearly was ordered to be struck out.

The Chairman then moved—"That the Bill now submitted be accepted and approved, and that the common seal of the Company be affixed thereto."

Mr. W. Anderson seconded the proposition, which was carried.

The Chairman next moved that the Directors be authorized to make such amendments in the Bill, during its progress through Parliament, as they might deem necessary, and as Parliament might sanction.

Mr. Smith seconded the proposition, which was agreed to.

A vote of thanks having been awarded to the Chairman, the meeting terminated.

ALLIANCE AND DUBLIN CONSUMERS GAS COMPANY.

A Special General Meeting of this Company was held on Monday, the 10th inst.—Edward Fottrell, Esq., J.P., in the chair—for the purpose of submitting to the Proprietors the Bill to be promoted by the Directors in the present Session of Parliament, entitled "A Bill to enable the Alliance and Dublin Consumers Gas Company to construct tramways for the purposes of their undertaking, to define certain powers of the Company, and for other purposes."

The Secretary and Manager (Mr. W. F. Cotton) having read the notice convening the meeting,

The Chairman said this was a special meeting, called in pursuance of the Standing Orders of Parliament, which required every company to hold a meeting of shareholders when promoting a Bill affecting the interests of the company. Before alluding to the special object of the meeting, however, he might congratulate them on the favourable change that had taken place in the market price of gas shares. He had always expressed the opinion that nothing would interfere with gas interests, and he was happy to say that, so far, results had justified his convictions. With regard to the Bill the Directors had thought it prudent to promote this session, he would give the meeting a summary of its provisions. The Company experienced great inconvenience from the bad state of the roads from Sir John Rogerson's Quay to their Great Brunswick Street works, and, therefore, the Directors had applied for power to lay down tramways to facilitate the carrying on of their operations. They also asked for permission to erect some sheds on Sir John Rogerson's Quay, or at such other place as might be deemed best. In another part of the Bill they sought power to let gas-stoves and gas-engines on hire. These engines were coming greatly into favour, and the Directors were deliberating on the advisability of having an exhibition of gas-stoves and similar appliances, in order to show the public how they might be used. Although the Company already possessed the power of introducing any improved means of lighting, the Directors considered it necessary, under present circumstances, to apply to Parliament again for the privilege in their new Bill, in order that the objects of their present Act might be clearly defined, and any doubts that might arise as to the Company possessing power to expend money in providing such additional illumination might be removed. Those were the objects of the Bill to which the Shareholders assent was sought. It had been stated that the power given to the Corporation meter inspectors was not ample enough; it was said that they could only regulate a certain part of the meters. That would seem to imply that the Company were seeking to avoid a thorough inspection of their meters before they were sent out to the public. The Directors, therefore, introduced a clause into the Bill, giving authority to the inspectors of meters appointed by the Town Council to test not only the meter-drums, but also the indices and working parts generally; so that henceforth every portion of the meters might be tested. That clause was inserted quite voluntarily on their part, to show that the Company were acting in perfect good faith. He then moved—"That the Bill now submitted be, and the same is hereby approved of, and the Directors are authorized to proceed with the same."

Mr. M'Cready seconded the resolution.

Mr. M. Tallon asked if any additional capital was asked for in the Bill.

The Chairman said there were no money powers whatever.

The resolution was then put, and unanimously adopted, and the meeting terminated.

Sale of Gas Shares at Lincoln.—On Friday, the 7th inst., at a sale by auction, at Lincoln, five old shares in the Lincoln Gaslight and Coke Company were sold at £50 10s.; and six new shares at £68. Two lots of £114 improvement stock realized £110 each, and three lots £108 each; while £160 5 per cent. preference stock in the Company was bought for £167.

NEWCASTLE-UPON-TYNE AND GATESHEAD GAS COMPANY.

An Extraordinary Meeting of this Company was held on Wednesday, the 15th inst.—Alderman Hedley in the chair—for the purpose of considering the provisions of the Bill before Parliament, promoted by the Company for the purpose of obtaining further powers.

The Chairman said it was necessary, under the Standing Orders of both Houses of Parliament, that the Shareholders should give their sanction to the Bill, and the resolution he had to propose was—"That the Bill now submitted to this meeting, entitled 'A Bill to confer further powers upon the Newcastle-upon-Tyne and Gateshead Gas Company,' be approved, and that the common seal of the Company be affixed thereto." The principal, almost the only object of the Bill, he said, was to enable the Company to issue more capital. The sum applied for this time might appear to many of the Shareholders very large—£300,000. In the Bill of 1873 only £100,000 was applied for; but the Directors, to save going too often to Parliament, thought that, as the Company was an important one, it would be very much better to have powers to raise the large sum of £300,000. Of course, it would be issued only as might be required, in sums of, probably, £50,000 at a time; and it would be the wish of the Directors to issue it as slowly as possible, so as not to have to pay more interest than was really necessary. He alluded to the great increase which had of late taken place in the demand for gas, and said the Directors always extended their works so as not to have any complaints. There had been scarcely a complaint of the want of gas for a considerable time now, and, to keep good their character, they must still continue to look forward, and extend their works to meet what might be required to be supplied, should a similar season to this occur twelve months hence. So that, where £100,000 was sufficient five years ago to meet what they required, they thought it better that they should now ask for a much larger sum, but which would not be called up unless required. There was one matter about which a good deal had been said lately—the electric light. The electric light, however, had not, as it appeared, done them very much harm, seeing the very large increase that had taken place in their consumption. There was no doubt that, when M. Edison's discoveries were first mentioned in England, the news frightened some of the holders of gas shares very much; and, being afraid to continue to hold them, they sold out at extremely low rates, very much to their disadvantage. Part of the shares that had been standing at 142 went for as low as 105, and in London they sold for much less than that. But the scare was passing away, and in London he believed the shares which stood at 130 were now about 180. They could not overlook the fact that Mr. Edison was a great discoverer. They did not yet know the extent of his discoveries; but if they should be anything like what was stated when the news first came to England, they might have a very material effect upon gas shares. He (the Chairman) did not believe they would, but he could not set himself up in opposition to scientific men. To protect the Shareholders as far as they could, they were asking to have the power to use the electric light. They had not applied for a monopoly of it, but simply to be allowed, as a public company, to use it. They had no power to expend the Shareholders capital upon the electric light unless Parliament gave them authority to do so. Another important clause for which the Company thought it necessary to apply was that with reference to the sliding scale. The Directors deemed it only reasonable that, when they supplied the public, who were the gas consumers, with gas at an extremely low rate, the Shareholders should derive some advantage from their so doing, especially when it was brought about entirely by the good management of the Company, by working economically, turning all the products to the best account, and making all their purchases as well as they possibly could. They might take credit for having, as soon as iron came down very much in price, expended a large sum in the renewal of the mains and services. Many of them, as they knew, had become worn out, and were leaky, thus causing a great loss to the Company. So far as they had been able to do so, these pipes had been renewed, and large mains laid instead of small ones. In addition to all these renewals, the extensions of mains and pipes in the course of ten years had been from 200 to 365 miles, all of which went to show the great increase of consumption that had taken place. This had told to the advantage of the Company. The leakage, which a few years ago was something like an average of 20 per cent., had been reduced to about 11 per cent., and 9 per cent. upon all the gas they sent out. This was a very important matter, and it was one of the great savings they had effected, which had enabled them to charge such an extremely moderate price for their gas. Taking into consideration the low rate at which the public lamps were supplied, it made a difference of from 2d. to 3d. per 1000 feet. When the price of gas was 3s. 4d., it was equal to 3d. per 1000 feet upon all the gas they sent out to the public. One-seventh of the entire quantity of gas they made was supplied to the public lamps, at 1s. 6d. per 1000 feet less than the ordinary consumer paid. If they took 2d. from their price of under 2s. 6d., they were really supplying gas at less than 2s. 4d. per 1000 feet. The sliding scale they were asking Parliament to grant was what had been allowed to all the Metropolitan Companies. Not only was the sliding scale allowed to those Companies, but they were also permitted to pay 10 per cent. on their capital. All the new capital they had applied for had been granted, subject to the payment upon it of a dividend of 7 per cent. only; and, in addition to that, they had to put it all up to public auction. An investment in a gas company was not like an investment in Consols. There was always a risk—in fact, as he had stated, so frightened were many shareholders at the mere rumour that the electric light was likely to come into competition with gas, that the shares went down something like from 30 to 40 per cent. It was only right, when the public were supplied with gas at an extremely low rate, that gas shareholders should have some little extra dividend. When the price went above 3s. 4d. per 1000 feet, if it should ever go above—they did not know what might take place, as coal might advance in price—then, for each penny above that price, 5s. per cent. would have to be deducted from the 7 per cent. When they went to Parliament, in 1873, to ask authority to increase their charge—at that time they had no power to go above 3s. 4d. per 1000 feet, and coal went up to such an extraordinary figure that they had to ask for an advance—they were told by Lord Redesdale, in the House of Lords, that, if they asked for power to charge the public more, the Shareholders must submit to a smaller dividend; so that they were only allowed to pay 5 per cent. They had all seen a report from the Parliamentary Committee of the Town Council upon the Bill. They had deliberated upon it in a judicial capacity, and he thought they ought to have taken a much more favourable view of it than they appeared to have done. Under any circumstances, it had always been the custom, and it ought to have been followed in the present case, that, before issuing a report to the Council, they should have asked the Directors of the Company to have met them, and talked the matter over together, so as to see whether they understood clearly both sides of the question. As they had not done that, the Directors considered it necessary to write a letter to the Council in reply to the report, and that letter would be read at the Town Council meeting. It would explain a good many points that they had brought forward, and it would be issued to the Members of the Council, the Shareholders in the Company, and those interested in the matter. [The letter is here appended.] He moved the resolution which he had read.

Alderman GREGSON seconded the resolution, which, after some discussion and explanation by the CHAIRMAN, was carried.

The CHAIRMAN said that the next resolution was—"That the Directors be, and are hereby authorized to make such amendments in the Bill, during its progress through Parliament, as they might find necessary, and as Parliament might sanction." That, he said, would meet any objection, as it was still open for any amendment to be made.

Alderman PLUMMER seconded the resolution, and it was agreed to.

A vote of thanks to the Chairman terminated the proceedings.

The following is the reply (referred to above) of the Directors of the Newcastle and Gateshead Gas Company, to the reports of the Parliamentary and Gas Committees of the Newcastle Town Council, which were published in the JOURNAL of the 4th inst., p. 159:—

To the Right Worshipful the Mayor, Aldermen, and Councillors of Newcastle-upon-Tyne.

Sirs,—The Directors of the Newcastle and Gateshead Gas Company have had before them the reports of the Parliamentary Committee of the Council and also of their Gas Committee, and both of them have been carefully considered. The Directors cannot avoid expressing their regret that neither of the Committees afforded the Directors an opportunity of discussing the subject with them before adopting the reports, and thus explaining fully the circumstances of the case, which would have enabled both of them more accurately to have formed a decision, having, as they would have had, before them both sides of the question.

This has always hitherto been the course pursued on similar occasions, and it has invariably led to a clear understanding and an agreement has always been found practicable, and expensive contests in Parliament avoided. The Directors feel it their duty to place candidly before the members of the two Committees, and also before the Council, the objects of the proposed Bill, and they trust that their doing so may remove some misapprehension which appears to prevail, and enable the good understanding which has so long existed to be maintained with the Council.

1. The Parliamentary Committee correctly state that previous to 1873 the capital of the Gas Company was £160,000 of 10 per cent. stock, £40,000 of 3¼ per cent., and £100,000 of 7 per cent. stock, and which by the Act of 1873 was converted into a consolidated 7 per cent. stock.

The Committee do not, however, point out that as the Gas Company was established 40 years ago, and the greater part of the 10 per cent. capital was issued soon after that time, nearly all, if not all, of it changed hands years ago at a premium, and the present holders are not receiving more than 5, or, at the most, 6 per cent. upon the prices they paid for their investment.

2. It is true that by the Act of 1873 the Gas Company were empowered to raise an additional capital of £100,000, by the issue of new consolidated stock to that amount, the dividends on such stock to be limited to 7 per cent. so long as the price of gas did not exceed 3s. 4d. per 1000 feet, less 10 per cent., or 5 per cent. if the price exceed 3s. 4d. per 1000 feet.

The Committee, however, omit altogether to inform the Council that by another clause of the same Act the new capital had to be sold by public auction, and they proceed to argue as if the Directors at that time had allotted the whole of the £100,000 new stock to their Shareholders at par, and that those Shareholders were now in the enjoyment of a full 7 per cent. dividend upon such stock.

But, as a matter of fact, the new stock was all sold by public auction, and, as to the greater portion of it, at prices ranging from 30 to 40, and even as high as 42 per cent. above the par price.

The present holders, consequently, instead of receiving 7 per cent., as stated by the Parliamentary Committee, are only in the receipt of 5, or, in some cases, a little over 5 per cent.

As the whole of the calculations entered into by the Committee are based upon a 7 per cent. dividend, it follows that 2 per cent. must be deducted from these calculations.

The Directors regret that the Parliamentary Committee should have omitted to quote such an important clause as this, particularly as they must have had the Act containing the clause before them at the time.

Had this clause been quoted, it would have completely altered the calculations, and prevented the Committee adopting the erroneous assumption that, if the proposed Bill passed as framed, the Shareholders might eventually, under the sliding scale, receive as much as a 14 per cent. dividend, regardless altogether of the existence of a provision that the new stock would have to be sold by auction, and of the fact that the present Shareholders would not personally receive any portion of the price paid.

But this consummation can only be arrived at on the supposition that the new stock is not sold at a premium, and that the price of gas is reduced to 1s. per 1000 feet, less 10 per cent. discount.

The Directors apprehend that the gas consumers would only be too glad to allow the Shareholders a dividend of even 14 per cent., if they were supplied with gas at 1s. per 1000 feet, less 10 per cent. discount.

The Directors submit that the view adopted by the Parliamentary Committee ought not to be taken of the sliding scale.

It has repeatedly been sanctioned by Parliament and incorporated in the Acts of many gas companies, including the largest in the Metropolis, and has been found to work satisfactorily. No benefit can result from it to the Shareholders of the Company, without a corresponding advantage being conferred on the consumers in the shape of a proportionate reduction in the price of gas, and the clause necessarily acts as an incentive to Companies to practise economy, and to exert themselves to the utmost to supply gas at the lowest possible price to the consumers.

3. The Parliamentary Committee also omit to point out that the Act of 1873 limits the charge for the public lamps to 1s. per lamp per week, and an allowance of 2s. per lamp annually for repairs.

The Directors submit that this ought to have been quoted, as it has a most important effect upon the price charged to the gas consumers; the fact being, that as one-seventh of all the gas made by the Company is at present supplied to the public lamps of the two boroughs at 1s. 6d. per 1000 feet less than is paid by the ordinary consumers, the price at which the Directors are enabled to supply gas to the consumers is thereby most materially affected, and this fact must be regarded in considering the standard price of gas and the amount of the present charge.

4. The Parliamentary Committee quote from the same Act, "That the charges for the time being made by the Company for gas, should be limited, as far as reasonably practicable, to the amount requisite to raise the dividends according to the scale aforesaid—that is, 7 per cent. when the price does not exceed three-fourths, less 10 per cent., or 5 per cent. if above that."

The Directors submit that it was due to the Gas Company that the Parliamentary Committee should have stated that the Company, in common with all other Gas Companies, are empowered by the Gas-Works Clauses Act, 1847, to set aside, out of any surplus profit that may from time to time arise, as a reserve-fund, a sum equal to 1-10th of its nominal capital, which, upon the present capital of the Company, would amount to £45,000; and that such reserve-fund is to be invested in Consols, and held as a reserve to make up dividends, should, at any time, the Company not be able to pay the prescribed rate.

It might also have been remembered that the Directors of the Gas Company, when they found they had a surplus of profits in 1875, instead of transferring them to a reserve-fund, as they might have done, gave the gas consumers the full benefit of this surplus, and reduced the price of gas 3d. per 1000 feet; and again, in July of last year, when they found they had a surplus, reduced the price another 3d. per 1000 feet; and that these reductions were made without a single penny going into the pockets of the Shareholders. These reductions were the voluntary acts of the Directors of the Gas Company, and they think that they may be taken as a sufficient indication of their desire (which they still retain) of supplying gas to the public at the lowest possible price. The 6d. per 1000 feet, thus voluntarily given, amounts to £16,000 a year, and this sum is augmented by the amount annually sacrificed by the low price charged for the public lamps.

5. The Parliamentary Committee proceed to observe that "at the present time the Company can earn their 7 per cent. dividend, with a charge of 2s. 9d. per 1000 feet, less 10 per cent."

The Directors submit that as this reduction to 2s. 9d. was only made in July last, it is impossible to determine, until after the accounts for the year ending the 30th of June next are made up, whether or not sufficient has been earned at the reduced price to provide for the payment of the statutory dividend. Moreover, the Parliamentary Committee proceed to suggest that the standard price should be reduced from the present maximum rate of 3s. 4d., less 10 per cent., to 2s. 9d., less 10 per cent., and that for every penny that the Company may in future be compelled to charge above 2s. 9d., less 10 per cent., their Shareholders should suffer a reduction of 5s. per cent. on their dividend.

The Directors feel that the maintenance of the present standard price is absolutely necessary for the safety and protection of the Company.

It was originally fixed with the full assent of the Corporation, and is less than that prescribed for very many other gas companies. It must be obvious that no company would be secure with a standard price strictly limited to the net price of the gas supplied.

The cost at which gas can be produced and supplied depends upon many elements.

The cost of coal, as experience has shown, is very variable, and if it be raised considerably, as there is no certainty that it may not, it would render it impossible for the Company to supply gas at the price to which the Parliamentary Committee propose to reduce the standard.

Moreover, the price of residual products produced in the manufacture of gas fluctuates greatly, and a diminution of price might have a similar effect.

There must, therefore, of necessity, always be a sufficient margin in the standard price above the net price charged, so as to allow for these contingencies, and the Directors trust that the Council will be satisfied by the previous history of the Company that this has never been allowed to prevent the consumers from receiving the full benefit of every possible reduction.

It becomes necessary to inquire what the effect of the Parliamentary Committee's suggestion would be upon the purchasers of the £100,000 authorized to be raised in 1873, and which was sold by public auction.

The present dividend on the cost of this stock will average from 5 to 5¼ per cent., and should the price of gas have again to be advanced to 3s. 4d. per 1000 feet, seven times 5s. would have to be deducted, equivalent to 1¾ per cent., thus leaving to the purchasers of this stock from 3¼ to 3½ per cent. dividends.

6. The Parliamentary Committee, out of all the towns in England, have only been able to quote two of small importance—viz., York and Plymouth, as charging prices nearly as low as Newcastle. Had the Committee inquired, they would, no doubt, have found that there were some special circumstances in each case that enabled them to do this; for instance, the paid-up capital of the Plymouth Gas Company is only £85,000. The Committee also mention that in London the South Metropolitan Company can sell a 16-candle gas at 3s., and pay 10 per cent. dividend, but they omit to state that this Company is paid the same price for the public lamps as that charged to their largest customers, and have also all expenses connected with the lighting and extinguishing the lamps defrayed, and the lamps found for them by the Lighting Authorities. The Committee ought also to have stated that this Company have a sliding scale, and that the standard price is 3s. 6d. per 1000 feet, and that, at this time, they are paying their Shareholders 11¼ per cent. dividend.

7. The Parliamentary Committee have entirely left out of their report the fact that the main object of the present Bill is to take power to raise more capital to enable the Directors to extend their works, so as to meet the constantly increasing demand for gas, stimulated, as it has been to a very large extent, by the low price now charged, and that this increase of capital necessarily entails the risk of a decrease in the rate of dividend.

The Directors of the Company have to consider whether, if the alterations proposed by the Parliamentary Committee were carried out, it would be practicable to raise the new capital.

Having regard to the sensation that recently prevailed respecting other lighting agencies than gas, the Directors fear that unless some inducement, such as the sliding scale, is held out, it will be difficult to place the new capital, and thus the Company may be prevented from being in a position to meet the constantly increasing demands of gas consumers, and afford the facilities they require. To show the extent of the increase in the demand, the Directors may mention that the quantity of gas made in the seven weeks ending the 29th of January last was 215,847,000 cubic feet, as against 187,791,000 cubic feet manufactured during the corresponding period of last year.

The Directors have thought it proper to include in their parliamentary application the power to supply the electric light, in order that, if it should be found to be an available and more suitable means of lighting than that at present existing, the Company may be enabled to supply it.

There is at present no means of ascertaining the cost at which it can be supplied, and it must therefore be left, as proposed by the Bill, to be the subject of mutual arrangement and agreement, and this is the course which has been adopted in all the pending Bills. The Company have reason to believe that the Chairman of Committees in the House of Lords will require the insertion of a clause that the authorities now sought are to be subject to such regulations as Parliament may hereafter prescribe, which, no doubt, will be formed in a manner sufficient to protect the public.

The Directors desire to add that they seek no monopoly for the supply of this light, and there is nothing contained in the Bill calculated to confer a monopoly, and that it will be perfectly free to the Corporation or other persons to provide it.

There is no objection on the part of the Company to increase the standard of the illuminating power of the gas to 15½ candles, the actual illuminating power, as estimated by Mr. Pattinson, or to retain the present test, as suggested by the Gas Committee.

The other alterations proposed by Mr. Pattinson are unobjectionable.

In conclusion, the Directors have to observe that they are perfectly prepared to meet the Committees of the Corporation, and to discuss the proposed Bill; and it is their earnest desire that it may be found practicable to agree to the clauses, and so avoid an expensive contest in Parliament.

(Signed) WM. HARDIE, Secretary.

Newcastle-upon-Tyne, Feb. 5, 1879.

THE NEWCASTLE TOWN COUNCIL AND THE GAS COMPANY'S BILL.

A Special Meeting of the Newcastle Town Council, convened under the provisions of Leeman's Act, was held on Wednesday last, pursuant to a resolution of the Council, at their meeting on the 29th ult. (see JOURNAL for Feb. 4, p. 159), for the purpose of considering the Bill promoted in Parliament by the Newcastle and Gateshead Gas Company, and, if necessary, to sanction the Council's opposition to the Bill. The MAYOR (Mr. T. Robinson) presided.

Alderman WILSON moved the following resolutions, of which he had given notice:—"To sanction the opposition by the said Town Council, as the governing body within the meaning of the Act 35 & 36 Vict., cap. 91, intituled, 'An Act to authorize the application of Funds of Municipal Corporations and other Governing Bodies in certain cases,' to a Bill intended to be promoted in the ensuing session of Parliament, intituled, 'A Bill to confer further Powers on the Newcastle-upon-Tyne and Gateshead Gas Company.'" "To determine that the costs and expenses incurred, and to be incurred, by the said Town Council and Urban Sanitary Authority, in or about such opposition, shall be payable and paid out of the borough fund of the said borough, such fund being under the control of the said Council or governing body." In doing so, he said they were all aware that, under Leeman's Act, the present proceedings were necessary in order that the Council might maintain the power of opposing in Parliament any Bill which appeared to interfere with the rights of the public. It appeared to the Gas Committee that the Bill of the Newcastle Gas Company infringed upon those rights, and that, therefore, the Council ought to have power to appear before Parliament, and there state their objections, though he did not think it would be necessary to go so far as that. The Committee had had an interview with the Directors of the Gas Company, and he thought they would have been able to obviate the necessity of their appearing as an opposing body; but, although there was not very much difference between them, yet there were one or two important points which could not be arranged. The Gas Company desired to make 3s. 4d. per 1000 feet the standard price of gas. The Committee had gone into the matter, and proposed a sliding scale, by which the Shareholders would be allowed a dividend of 7 per cent. when the price was 2s. 9d. per 1000, and as it rose above that price, the dividend they would be entitled to would decrease. By this system, the lower the price of the gas supplied by the Company, the higher the dividend the Shareholders would be entitled to. He was sorry to say the Company could not see their way to agree to this scale, and it was upon that point, and almost that point only, that the negotiations fell through. He hoped they would be able to come to terms before the Bill entered the House; but, in the meantime, it was necessary that they should be prepared to meet the Gas Company on their own ground.

Mr. GIBSON, in seconding the motion, said the most objectionable feature of the Bill was the proposal contained in section 12 for the alteration of the rate of dividend which the Company were to be permitted to declare. According to the Act which at present regulated the Company's rights in this respect—namely, the Act of 1873—the Company were entitled to declare a dividend of 7 per cent., and the maximum charge for gas was to be 3s. 4d. per 1000 cubic feet, subject to the proviso that the charge

was to be limited, so far as it was reasonably practicable, to the amount required to pay this dividend of 7 per cent., without leaving an excess of undivided profits. In June, 1876, with a charge for the preceding year of 3s. per 1000 feet, the Company found themselves with a profit of £7300, after paying a dividend of 7 per cent. According to their own showing, this amount of undivided profit would have allowed them to reduce the price of gas 2d.—say, to 2s. 10d. per 1000 feet; but they kept it up to 3s, and in June, 1877, after again paying a dividend of 7 per cent., they had an excess of undivided profit of £11,800, or £6466 more than would have been absorbed by a reduction of 2d. per 1000 feet at the previous June. They might then have reduced the price by 4d. without exhausting their undivided profits, but they kept it up to 3s. till June, 1878, when, after paying a 7 per cent. dividend, they found themselves with an excess of undivided profit amounting to £17,532. According to their own calculation, this would have enabled them to reduce the price of gas 6d. per 1000 feet, without exhausting their undivided profits; but the Company claimed great credit for reducing it by 3d. only, and it now stood at 2s. 9d. These figures were not guesses, they were taken from the balance-sheets lodged by the Company themselves at the office of the Clerk of the Peace. Bearing these facts in mind, and remembering especially that all profits above 7 per cent. belonged to the consumer, what did the Company now propose? They proposed that for every penny charged by them in excess of 3s. 4d. per 1000 feet, they should only be entitled to divide 5s. per cent. below 7 per cent. per annum, and *vice versâ*. That was to say, the price being now 2s. 9d. per 1000, they asked to be allowed to divide 35s. per cent. more than their agreed dividend of 7 per cent. The proposition was so unreasonable that one could hardly believe it to be seriously made; but the Chairman informed the Parliamentary Committee on Monday, that the Company could not consent to reduce the standard price below 3s. 4d., and therefore the Council were relieved of the trouble of considering any alternative proposal. In effect, then, whilst gas could be made for 2s. 9d. per 1000 cubic feet, including, in the cost, 7 per cent. on the Company's capital, they asked to be paid 35s. per cent. more, or £7875 per annum, without offering the consumers the slightest advantage. They clearly expected to be able to save this sum; or, if they did not, they might depend upon it they would make up the difference by charging more for their gas. According to their proposal, they might charge 2s. 10d., and divide £8 10s.; 2s. 11d., and divide £8 5s.; 3s. and divide £8 per cent.; whereas at present they could only divide £7 per cent., and might be compelled to give any excess of profit to the consumers. The proposal entirely failed for want of consideration. There were two other points referred to in the report of the Parliamentary Committee—namely, the clause relating to the electric light, and the clause for altering the mode of testing. As to these, he would not trouble the Council, as he had no doubt the interests of the public could be effectually protected without the expense of a regular parliamentary opposition, and he therefore rested his opposition on the objections to the 12th clause.

Mr. W. H. Stephenson did not think any local governing body would be justified in promoting an opposition to the Company's Bill, unless they were fully convinced of its necessity. He had been told by the Chairman of the Gas Company that by reducing the price of gas to 2s. 9d. per 1000 feet, less 10 per cent., a dividend of 10 per cent. might still be paid to the original Shareholders. If the propositions of the Company were allowed to pass, by charging 2s. 9d., the price at which the gas stood at present, they would be entitled to declare a dividend to their Shareholders of £8 15s. per cent. The Council could not, for a moment, submit to that quietly, and they must use every means legitimately at their disposal to thwart the Directors in their scheme.

Alderman Gregson: What if the price of coal goes up again?

Mr. Stephenson said he should not object if it did. After referring to the profits obtainable from the residual products of gas-making, he concluded by reiterating that it was the Council's duty to oppose the Bill, to appear against its preamble by Counsel, and to appoint one or two of their members to watch the Bill when it was introduced.

The Sheriff said the Gas Committee recommended 3s. per 1000 feet, and the Parliamentary Committee 2s. 9d.; and he would like to know which they were asked to take as the basis of the proposed sliding scale.

Mr. Stephenson replied that there was a full discussion of the matter, and the larger sum was mentioned, as they thought the Gas Company might recede from their position; but, seeing that the Company would not budge from the price of 3s. 4d., the advice of the Committee was that they should adhere to the 2s. 9d.

Alderman Gregson pointed out that it would be suicidal for the Company to raise the price of their gas, when, by so doing they would lower their dividends; but, on the other hand, there was every inducement to lower the price, as, by the Bill, this would enable them to increase the dividends. He contended that the opposition to the Bill was unfair to the Company and to the ratepayers.

Alderman Hedley (Chairman of the Gas Company) said the Directors of the Gas Company, as he had frequently remarked before, worked as much, or even more for the benefit of the gas consumers than they did for the Shareholders. At that moment Newcastle was supplied with gas at a price which was as low as, if not lower than that charged by any other company in the kingdom, and very much lower than that charged by 99 out of every 100 companies. He had no fear of contradiction on that point. The actual price at the present moment to the ordinary consumers was under 2s. 6d. per 1000 feet—0·3d. under it. They were bound, by an agreement with the Corporation, to supply the public lights at 1s. per 1000 feet less than the Corporation would have to pay if they paid in the same way as the Metropolitan Authorities. As one-seventh of the gas made by the Newcastle Company was supplied to the public lights, it followed that the consumers of the other six-sevenths had to pay 2d. per 1000 feet more than they would have to pay if the Corporation paid the same price as the largest consumers, which was the case in London. So that the real price at which the Gas Company were supplying gas was 0·3d. under 2s. 4d. per 1000 feet. At that low price the Company supplied the two boroughs of Newcastle and Gateshead with gas averaging considerably above the parliamentary standard of 14 candles. The increase in the demand for gas during the last eight weeks had been something extraordinary. It was the heaviest season of the year; but they had been able to meet all the demands made upon them—not with a puny light, but one with heat and brilliancy in it—one which warmed and made houses comfortable, and which, in many instances, had prevented the frost from freezing the water-pipes. What more could a gas company do? He further reviewed the past history of the undertaking, and said that if the increase of the last eight weeks continued, large as their works now were, they should have to extend them considerably, and they should require to go to Parliament for power to raise £300,000. Of course, that new capital would have to be put up to public auction, though it would only be sold as the Company might require. A very great change had taken place within the last six months in the prospects of gas companies. The electric light had caused a fall of 40 per cent. in the price of gas shares—even considerably more in London—when Mr. Edison's discoveries were talked about. They did not yet know what those discoveries were. It might be that, when they became known, the stock of gas companies might be almost of no value whatever. They could not raise this £300,000 unless they got purchasers for it; and if they were to start, as the Parliamentary Committee of the Corporation had asked them to do, by reducing the standard to 2s. 9d., it would be simply impossible to place their stock—there would be no purchasers at all at 2s. 9d. Nor did he think it at all possible that the Company could continue to supply gas at the present low price for any length of time, and if they had to advance to 3s. 4d., the present dividend of 7 per cent. would be reduced to 5. With all the risk of what was now going on before them in the shape of the electric light and other things, purchasers would not be found. They would not be allowed to sell their stock below par, and he was quite sure it could not be placed. The Company were entitled by Act of Parliament to the standard of 3s. 4d., and to reduce it to 2s. 9d. simply meant that the whole of the present holders of capital stock in the Company, which amounted to £450,000, would have to submit to a reduction of 2 per cent. It would be a loss to the Shareholders of the Company of £9000 a year, or, at 20 years purchase, equal to a capital of £180,000. Yet the Parliamentary Committee of the Corporation asked what they were to get in return! Simply the privilege of raising more capital—there was nothing else. As to the sliding scale, unfortunately for the Shareholders, it would always slide the wrong way, and in favour of the consumers. The Directors of the Gas Company were not prepared to undertake such a responsibility. They had met all the demands made upon them, and they had liberally and voluntarily reduced the price of gas. With regard to the question of a reserve-fund, he contended that the reply of the Directors to the report was perfectly correct. The Company had the power to set aside a reserve-fund. The only doubt was as to £100,000, but there was no doubt that they had the power to create a reserve-fund equal to one-tenth of the £350,000. He believed that, by an omission, the Gas-Works Clauses Act was not incorporated in the Act of 1873, which made a difference of £100,000. But the Directors also knew that they must invest the reserve-fund in Consols, on which they would receive 3 per cent.; and they thought that it would be better to give the gas consumers the benefit of it by reducing the price of gas. They did so, being confident that the Council would support the Company so long as they did their best to afford the town a plentiful supply of good gas. That they had endeavoured to do, and he hoped they had succeeded. He was sorry that he could not hold out the slightest hope that the Gas Company would give way. At this moment they were getting less than their standard price, and were voluntarily giving to the two boroughs £22,000 a year out of their profits. They were quite willing to go on, and, if supported by the Council, and were enabled to do so, they would have a double incentive to reduce the price of gas in the future.

Mr. Owen asked whether Mr. Hedley, when he laid such stress upon the fact that Newcastle was charged less for the light supplied to the public lamps than any other town, he remembered that they were not lighted during four months of the year.

Alderman Hedley replied that when the lamps were not lighted the Company received no payment. The charge was 1s. per week when they were lighted.

After some further conversation, the motion was, on a division, carried without opposition. Those members of the Council who were interested in the Company refrained from voting.

The meeting then terminated.

YORK NEW WATER-WORKS COMPANY.

The Half-Yearly Meeting of this Company was held on Thursday, the 6th inst.—Mr. J. F. Taylor in the chair.

The Solicitor (Mr. J. P. Wood) read the following report of the Directors:—

A statement of accounts for the past half year is sent herewith, and the Shareholders will observe there has been a considerable increase in the revenue of the Company.

The new works at Acomb Landing have, during the past half year, progressed as much as could be expected, having regard to the severe weather which has prevailed for so many weeks.

The Engineers report is annexed.

The Shareholders will be asked, at the special meeting to be held immediately after the ordinary meeting, to give the Directors power to raise, under the borrowing powers of the Company's Act of 1876, the further sum of £5000, on mortgage or debenture, for the general purposes of the Company.

The Directors recommend that a dividend of 5s. per share on the preference shares, being at the rate of 5 per cent. per annum; a dividend of 8s. per share on the ordinary shares, being at the rate of 8 per cent. per annum, and a dividend of 2s. 6d. per share on the new shares, 1878, being at the rate of 5 per cent. per annum, for the past half year, be declared, and that the same be paid, without deduction for income-tax, on and after the 11th of February next.

The following Directors—viz., Mr. John Francis Taylor, Dr. William Procter, and Mr. John Wilson—retire by rotation, and are eligible for re-election. The retiring Auditor is Mr. Richard H. Feltoe, who is eligible for re-election.

The report of the Engineers was as follows:—

30, *Great George Street, Westminster, S.W.*

To the Directors of the York New Water-Works Company.

Gentlemen,—We have the honour to report that the new works at Acomb Landing are now approaching completion. The engine and boiler houses have been covered in for some time past, and the chimney has been finished. The erection of the engines has now been so far advanced towards completion, that there is every reason to believe they will be brought into use during the month of March next. We have pleasure in stating that, so far as can at present be ascertained, the new buildings have not been injured by the unusually severe frosts, to the effects of which they have been subjected, nor have the embankments sustained any appreciable damage from the recent high floods.

(Signed) T. and C. Hawksley.

The Chairman, in moving the adoption of the report of the Directors, said there was very little for him to state, as the report itself was sufficiently exhaustive and descriptive of the proceedings of the Company for the past half year. He would, however, reiterate the statement that the receipts had been satisfactory. They showed a considerable increase over the corresponding half year, and this arose from an increase in the number of new streets, additional houses, and the fixing of some large meters, which had been very advantageous to the Company. On the other side of the balance-sheet they might, perhaps, think that the amount spent in repairs had been large; but he pointed out that one of the filter-beds had had almost to be reconstructed. The expenditure would considerably improve their resources for filtering. Another heavy item would probably figure on the same side of the balance-sheet for the next half year, arising from the proposed extension of the trunk main into the Bootham neighbourhood. The trunk main at present ended at Bootham Bar, and to go a little farther, in another half year, they would have to undertake a very serious outlay in the Fulford district, which was very much increasing. Still, as they knew, the more pipes they buried in the ground the greater would be their income. He also alluded to the inconvenience which had been occasioned in the water supply by the late frost, and said that that inconvenience was not caused by the Company. If architects and builders would exercise a little more care in regard to service-pipes, there would not be the inconvenience.

The Deputy-Chairman (Mr. J. L. Foster) seconded the motion.

Mr. Rymer said that the report of the Engineers did not sufficiently explain the delay in carrying out the new works.

Mr. Featherstone would like to ask if the work to which the Chairman had referred did not belong more to capital than to revenue account.

Mr. W. C. Anderson, J.P., expressed a hope that the Directors would

not think of increasing the dividend, which now stood at 8 per cent., but endeavour to keep it permanently at that. It was far better to be content with a moderate dividend than to be having it up and down. He himself regretted that it had ever been raised to 8 per cent.

The CHAIRMAN, in reply to the remarks, said the delay at the new works had been entirely due to the weather. There had not been the slightest fault to find with their Contractor, who had, so far, fulfilled his contract to their entire satisfaction, and to the satisfaction of the Engineers. The Board had hitherto charged that which they considered new work to the construction account, but renewals they had always thought it right to charge to revenue. He expressed a hope, in regard to Mr. Anderson's observation, that the Company would not need to lower their dividend.

The report was then adopted.

The retiring Directors and Auditor having been re-elected,

The meeting was made special, and the Board were authorized to raise a further sum of £5000, under the borrowing powers of the Company's Act of 1876.

The CHAIRMAN mentioned that they had already had abundance of money offered, showing the confidence of the public in the Company.

Mr. RYMER moved a vote of thanks to the Directors, and the proposal was seconded by Mr. FELTOE, who said that, as an Auditor, he could satisfactorily testify to the inner working of the Company.

The motion was adopted, and the meeting terminated.

WEARDALE AND SHILDON DISTRICT WATER-WORKS COMPANY.

The Half-Yearly General Meeting of this Company was held at Darlington, on Wednesday, the 5th inst.—Mr. H. PEASE in the chair.

The SECRETARY (Mr. W. Harding) read the report, as follows:—

Your Directors have pleasure in submitting herewith statement of accounts up to Dec. 31, 1878, examined and certified by the Auditors.

The revenue account, including the amount brought forward from last half year, shows an available balance of £5798 15s. 11d., out of which your Directors recommend the payment, on the 7th of February, to the Proprietors registered in the Company's books on the 23rd inst., of a dividend (clear of income-tax) of 8s. 9d. per share on the shares (Act 1866); 6s. 7·8d. per share on the first issue of shares (Act 1875), £19 paid; and 4s. 6·6d. per share on second issue of shares (Act 1875), £16 paid; being at the rate of 3½ per cent. per annum. This will absorb £5530, leaving a balance of £268 15s. 11d. to be carried to the credit of next half year's account.

Your Directors have to report that the Tunstall reservoir is not yet completed, in consequence of a passage of water having been discovered to exist in a bed of ganister, lying at a considerable depth, and forming part of the natural ground lying north of the existing puddle trench. It has, therefore, been found necessary to continue the trench into the adjacent hillside, with the object of stopping the channels along which water has made its escape. All the completed works of the Company are in excellent condition.

At the conclusion of the business of the ordinary half-yearly meeting, a special meeting of the Company will be held, when a Bill for extending the limits within which the Company may supply water, for empowering them to purchase the undertaking of the Durham Water Company, to construct additional works, and to raise additional capital, and for other purposes, will be submitted to the Shareholders for their consideration and approval.

The Directors retiring this year are Mr. Henry Pease and Mr. Alfred Kitching, who are recommended for re-election. The retiring Auditor is Mr. Charles Rutter Fry, who is eligible for re-election.

The CHAIRMAN moved the adoption of the report and statement of accounts. He said the total number of shares was 16,000, and the number of Shareholders 630, and there was £360,160 paid up. The expenditure of the Company on construction last half year was £10,515 15s. 11d., and the number of houses in which the water was laid on was 15,670, being an increase over last half year of 521. The number of consumers for manufacturing purposes was 140, and the amount paid by them for consumption had decreased by £211 16s. 4d. from the last half year. There was, however, an increase on domestic consumption of £142 19s. 6d. The decrease on revenue account for the half year was £68 16s. 10d., and the increase in expenditure on that account was £316 0s. 9d. They would see, by a reference to these figures, why the Directors were not in a position to declare the same dividend as they did at the last general meeting.

Mr. MACNALLY seconded the motion, which was agreed to.

On the motion of Mr. G. ALLISON, seconded by Mr. J. HOBSON, the dividends mentioned in the report were declared.

After the re-election of the Directors and Auditor, a discussion arose as to the progress of the works in connection with the Tunstall reservoir, and a Shareholder asked what the works would be likely to cost, and for an approximate estimate of the amount expended thereon up to the present time.

Mr. HAWKSLEY (the Consulting Engineer) stated that in works of the character that were going on at the reservoir, the expenditure must follow the researches. They hoped, however, that the work would be accomplished without any great cost. It would be only misleading where he to venture to predict the sum. It had not yet been determined how far they would have to go with the excavating, and it would be necessary to try, by actual test, whether it had been carried far enough. The reason of the work being done step by step, in that manner, was to make the cost as little as possible. The Shareholders should understand that there had been no leakage whatever from the artificial constructions. He might state that, in the end, the expense of having it done piecemeal was very little more than if it were done altogether. It was thought worth while in the interests of the Company to make the attempt, and the trial had been made to do the work by degrees. As a rough estimate, it might be stated that, up to the present time, £2000 had been expended.

The meeting was then made special, and, after some discussion, the following resolution was agreed to, on the motion of the CHAIRMAN, seconded by Mr. J. H. BOWMAN:—"That the Bill promoted by this Company, entitled, 'A Bill for extending the limits within which the Weardale and Shildon District Water-Works Company may supply water, for empowering them to purchase the undertaking of the Durham Water Company, and to construct additional works, and to raise additional capital, and for other purposes,' be approved, subject to all such additions, alterations, and variations as Parliament may think fit to make therein."

The business was concluded by a vote of thanks to the Chairman and Directors of the Company.

In reference to this Company, the *Engineer*, of the 6th inst., says: "The large scheme of water supply provided by the Weardale and Shildon Water-Works Company is now practically complete, and thus there is an efficient supply of water provided for a large proportion of the mining district of South Durham. The district extends from Tudhoe and Crook to Shildon, and includes colliery villages which have assumed the dimensions of towns, which were destitute of any means of water supply until, in 1866, the Weardale Company was formed on a small scale. Since then, as the wants of the district continued to grow, the capital was increased, and the small service reservoirs were replaced by two on a large scale—the practical completion of the last of which is now effected. The Waskerley reservoir—the first completed—has a storeage capacity of 450 million gallons, and that at Tunstall is of nearly equal capacity, whilst half a dozen service reservoirs, and a full scheme of main and distributing pipes, give means of supply far more than adequate to the needs of the large district. From the highest reservoir, at Tunstall, a 24-inch main conveys water to the Beechburn service reservoir, its length being 9½ miles. In addition to this, there are mains from Mount Pleasant to Langley Bridge, nearly 7 miles long; and others connecting the two large reservoirs at Tunstall and Waskerley, the service reservoirs at Tow Law, Ferry Hill, Stockley Fell, North Beechburn, Mount Pleasant, and other centres of the district. The Engineer-in-Chief has been Mr. Hawksley. The late Mr. William Bouch, of Shildon, was one of the chief developers of the undertaking, and acted as Resident Engineer, his successor being Mr. R. Askwith. The share capital of the Company is £400,000; and, inclusive of the exercised loan and mortgage powers, the amount paid up was £473,196 at the end of 1878. The chief expenditure has been in construction, the reservoirs, mains, &c., having cost £397,354; on land and compensation, £15,589 have been spent; and on plant, £5094. The revenue accruing from water supply is large, even although the works have not attained completion early enough to make all the expended capital remunerative, the revenue for the last half of last year being £7573. The chief reservoirs are of the most massive construction, situated on the high moorlands to the north-west of Bishop Auckland, supplied from an extensive gathering-ground, and distributed with ample pressure by gravitation. The Company are projecting for the ensuing session of Parliament a Bill to enable them to carry out a mutual agreement for the acquisition of the small works of the Durham Water Company, and the supply of the area over which the latter have powers."

MIDLAND ASSOCIATION OF GAS MANAGERS.

The Annual General Meeting of this Association was held on Thursday, the 6th inst., at the Midland Hotel, Birmingham, under the presidency of Mr. CHARLES HUNT, of that town. There was a good attendance of members.

The following Report of the Committee, and the Accounts, were submitted and adopted:—

In submitting their first annual report, your Committee desire to express their satisfaction at the progress already made by the Association.

The total number of members is now 33.

During the year just ended four ordinary meetings were held, the average attendance being 19 members.

At the first meeting an inaugural address was delivered by the President, and this has since been printed and circulated amongst the members. The two succeeding meetings (the second of which, owing to the kindness of the Directors of the Stourbridge Gas Company, was held at Stourbridge) were devoted to a discussion of the following question, introduced by Messrs. R. O. Paterson and J. Tindall:—"That brick or tile-built retorts or ovens are more durable and economical than ordinary clay retorts." An epitome of this discussion has also been printed and circulated.

At the last meeting of the year the members were, by permission of Mr. Maccabe, enabled to view the electric light (Jablochkoff's system) in actual operation at the Curzon Hall, Birmingham; and the full discussion that followed elicited many opinions as to the probable effect upon gas enterprise of the new method of illumination.

Afterwards, Mr. G. E. Stevenson gave an explanation of the method of heating retorts by gaseous fuel, as practised on the Continent, illustrating his remarks by numerous diagrams.

Your Committee feel that the active interest displayed at these meetings by so many of the members is a matter for congratulation; and they are desirous of sustaining and extending the usefulness of the Association by enlisting the co-operation of all the members.

With that view, they invite suggestions as to the future conduct of the meetings; and will be glad to receive offers of papers or of subjects for discussion.

To such of the members as have friends who are duly qualified and desirous of joining the Association, they suggest that the commencement of the new year is a fitting time for such application.

On behalf of the Committee,
(Signed) CHAS. HUNT, President.
JOHN TINDALL, Hon. Sec.

Jan. 13, 1879.

Statement of Accounts, for the Year ending Dec. 31, 1878.

Dr.		Cr.	
Dec. 31, 1878—		Printing, stationery, postage, &c.	£9 2 2
Subscriptions received during the year	£16 16 0	Hire of rooms	2 1 6
		Incidental expenses	0 12 6
		Balance in the hands of the Treasurer	4 19 10
	£16 16 0		£16 16 0

Dec. 23, 1878. Examined and found correct,
(Signed) JOHN STORER, WILLIAM CROSS, } Auditors.
PETER SIMPSON, Treasurer.

The PRESIDENT then delivered the following

INAUGURAL ADDRESS.

Gentlemen,—The first year of our existence as an Association has been by no means uneventful as affecting gas interests. In the first place, it will long be remembered as the year in which, with unaccustomed enterprise, the British Association of Gas Managers assembled in Paris, there to inspect methods of gas manufacture and distribution, differing in many respects from those with which its members were most familiar. Full of interest as was this investigation, and numberless as were the attractions of the "World's Fair," not the least cherished of the reminiscences of the visit are those which were furnished by the courtesy and hospitality with which the party were everywhere entertained.

We gas makers in England, rejoicing in an abundance of cheap material, and relying somewhat, it may be, upon the guardianship of paternal legislation, have for the most part been content to follow the beaten track, feeling satisfied if, year by year, some additional economy has been developed, some new vantage-ground gained in the war waged against waste. That this cautious policy has, in the main, been justified by results, there can be little doubt; for, after making all due allowance for varying circumstances, it will be found that nowhere, either on the Continent of Europe or on that of America, is gas supplied of a purer quality, or at a more reasonable price. But when on all sides are heard admissions of increasing excellence of foreign manufactures, and our manufacturers are lamenting, with ever-augmented bitterness, the keenness of foreign competition, it might well be that we too had fallen somewhat behind in the march of progress. In America has of late years been originated improvement after improvement in the art of telegraphy, while electricians on this side have confessedly stood still. France and Belgium are now able to boast, as the late Exhibition plainly showed, of engine factories capable of turning out work equal, if not superior to anything produced in this country. If this much can be said of competitive industries—if, notwithstanding the healthy stimulus created by friendly rivalry, our commercial supremacy has been hard to maintain, would it be deemed inexcusable in gas manufacturers, if, representing what is frequently termed, in accents of reproach, a monopoly, they too had suffered their neighbours to steal a march upon them? Whether this be the case or no, may form a not unprofitable subject for brief enquiry.

We were accompanied while in Paris, by several American gas engineers of eminence, who, from an independent standpoint, were able to compare the relative merits of the systems prevailing in the two countries; and, for the purpose of self-examination, the impressions made upon their minds may be of value to ourselves. What these were is to be gathered from the report of an interesting discussion which followed the reading of a paper by Major G. Warren Dresser, "On the Gas-Works of London," at a recent meeting of the American Gaslight Association, appearing in

the *American Gaslight Journal* for Nov. 2, 1878, and in the numbers of our own JOURNAL OF GAS LIGHTING for Dec. 10 and 17.

It is reassuring to know that, in many important particulars, the comparison is eminently favourable to the English works. As to our storing and distributing arrangements, no objection could be urged; while, to quote the words of one speaker, "the process by which hand power is saved, the coal distributed, and purification carried on, is such as to call forth the admiration of every one who sees it." But having regard to the fact that, after all, the retorts are the very heart of the concern, it is a matter of grave consequence to us to know that serious exception is taken to our method of managing them. The same speaker is reported to have expressed his surprise that "people who are so careful at the spigot are wasting so much at the bung." In other words, it is said of us that we do not get the proper amount of work out of our retorts, and that we do not obtain full value for the coals we put into them.

With this latter observation we may be disposed to agree, in the sense that all our operations show a deficiency as compared with the original weights of coals dealt with; but it is by no means clear that we are in this respect excelled by our neighbours. It so happens that the average production per ton is as nearly as possible the same, or about 10,300 cubic feet, in both capitals; but there is a considerable difference in the illuminating power of the two gases—that in London being for the most part about 16½ candles, as vouched for by independent official examiners, while in Paris it is assuredly not more than 15. At the same time, the unaccounted-for gas in the former city averages only 7 per cent., whereas in Paris it amounts to nearly 10 per cent.; so that while in neither case is it likely that the measurement can be affected by imperfect condensation, it is least likely in that of our own capital.

With respect, however, to the capability of the retorts, it is probable that we have something yet to learn. At the Paris Gas-Works, the retorts, which are D-shaped, 9 ft. 9 in. long by 25 in. by 14 in., and set in beds of seven, are charged every four hours, carbonizing during the 24 hours no less than 1760 lbs. of coal, and producing the large quantity of upwards of 8000 cubic feet per mouthpiece. This result, unequalled, as far as I am aware, in this country, is achieved with an expenditure of fuel varying from 25 to 29 per cent. of the coke produced, being much the same as our own. With us, however, as I need hardly say, the retorts are usually much smaller in sectional area, a size frequently met with being 21 inches by 14 inches by 10 feet to centre; and this, charged every six hours, is found capable of carbonizing about 1160 lbs. of coal, yielding 5400 cubic feet per 24 hours; so that a retort of the size employed in Paris might be expected to produce, if worked according to our method, 6400 cubic feet, still leaving 1600 feet in favour of the four-hour system. Now, what are the pecuniary advantages of the latter? As a matter of course, it cheapens the first cost of the retort-house, thus diminishing the subsequent charge for dividend upon that portion of the capital outlay. What this reduction is likely to amount to, per 1000 cubic feet manufactured, is easily determined. More often than not, the cost of a retort-house does not exceed £7000 per million cubic feet per diem manufacturing capacity; but let us assume that as much as £10,000 are expended. The annual dividend upon this, according to the present parliamentary maximum of 7 per cent., would be £700; so that upon the yearly output, which we should expect to be not less than 220 millions, the charge per 1000 cubic feet would be $\frac{£700}{220{,}000} = 0{\cdot}76$ of a penny; and the reduction to be effected by increased production, would, therefore, be $0{\cdot}76 - \frac{6400 \times {\cdot}76}{8000} = \frac{16d.}{100}$ per 1000 cubic feet—a sum not, perhaps, large in itself, being almost inappreciable in its effect upon the cost of production, but of sufficient importance to arouse the economical susceptibilities of our friends, who discover in it one of the evil consequences of our English system of "protective legislation."

We should, however, expect to derive further benefit from an increased yield in the shape of a reduced wear-and-tear account. With us, the cost of renewals may be said to average about ½d. per 1000 cubic feet, the retorts being made to last variously from 20 to 30 months, the minimum duration being probably 600 days. On the other hand, in Paris they renew their retorts after 12 or 14 months work. They make their own retorts, and more excellent specimens of workmanship and material than were those of their manufacture at the Exhibition, it would be almost impossible to produce. They were the admiration of us all. Nevertheless, they renew them at the end of 12 or 14 months—or, let us say 420 days; so that the comparison (again allowing for difference in size) is between

8000 cubic feet × 420 days, or 3,360,000 cubic feet; and
6400 „ „ × 600 „ or 3,840,000 „ „

being 480,000 cubic feet, or as 8 to 7 of productive power, in favour of the London system. Thus, the loss in one direction is so far balanced by a saving in the other, that, on the most favourable showing, there remains a difference of only 9-100ths of a penny per 1000 in favour of the four-hour system as practised in Paris; while there can be little doubt that, if local circumstances—such, for instance, as the raising of capital by local authorities at a lower rate of interest than that which forms the basis of the above calculation—were taken into account, this slight difference would, in many instances, entirely disappear, or be reversed. It is, in fact, clear enough, upon close examination, that the two sets of workers have been, and are compassing almost the same end by somewhat different means.

But, gentlemen, gratifying as it may be to us to know that we are able to hold our own in comparison with a system that produces such excellent results, our object would be but imperfectly accomplished without a reference to results obtained elsewhere, which are calculated to dim the lustre of those we have just been contemplating. Had our American friends, in the discussion to which I have alluded, given prominence to the details of their own successful working, they would assuredly have established more solid ground for their criticism than is afforded by the comparison which they instituted. 11,000 feet per ton, 7000 to 8000 feet per mouthpiece, and a lasting power of the retort equal to a production of 5 million cubic feet, are results which may well excite our admiration, and almost fill us with envy. It is needless to inquire whether they are possible without an expenditure of fuel which we should call extravagant, when it is recollected that in Germany the like results are said to be obtained with a positive economy of fuel. As to this latter, the Germans, if our information is to be relied on, appear to be unique at the present time. They alone have achieved an advance in this direction, which it would be well for us to study, and, as far as possible, to imitate. At Cologne, last summer, I was conducted with much courtesy through a gas-works in which the whole of the retorts were heated by means of furnaces similar in construction to those with which Mr. G. E. Stevenson made us acquainted at our last meeting. The fuel is thus supplied to the retort-beds in a gaseous form; the air necessary to combustion, being, previous to admixture, raised to a high temperature by contact with the brickwork of the exhaust-flue, so that in this way heat, which would otherwise, as with us, be wasted, is utilized almost in the same manner as by a Siemens regenerative furnace. The retorts are set in beds of sevens and eights; are oval in shape, about 20 inches by 15 inches, by 9 feet long; last 18 months, and are found equal to carbonizing about 1760 lbs. of coal (in five-hour charges) every 24 hours, producing 11,000 cubic feet per ton of 16½-candle gas, and this with a consumption of fuel not exceeding 22 per cent. of the coke produced. Such are the figures as they were given me; and they are in many respects confirmed by reports from other works where analogous systems of firing have been adopted. In addition may be mentioned the arrangement by which the furnaces are fed—namely, through a hole in the floor of the retort-house—as one which evidently admits of a considerable saving being effected upon this portion of the work. Similar furnaces, being likewise a modification of Siemens regenerative furnace, which latter was formerly in use at the Windsor Street works, are largely employed in Paris, and are worked at a considerable economy of fuel; but the German arrangement appears to carry off the palm for simplicity—a condition essential to success in all our operations.

The Exhibition of Gas-Heating Apparatus which was opened in Birmingham last June, was probably the most important of the kind ever attempted. Following close upon the one held during the preceding year at South Shields, it pointed yet more clearly, and with increased emphasis, to that wide field for the employment of coal gas, which, hitherto neglected, needs only to be worked with energy and intelligence to become a chief source of revenue to the manufacturer. It may with truth be said that, whereas in the provision of light we have many competitors, and are threatened with more; on the other hand, as purveyors of gaseous fuel, we are beyond the reach of rivalry, and the chief obstacles in the way of success are of our own creating. So accustomed have we become to a consumption increasing year by year without effort on our part, except what is necessary to keep pace with it, that this increase has almost come to be regarded as a sort of natural consequence, requiring neither encouragement nor stimulus from ourselves; and thus it has come to pass that the consumers have been left very much to themselves, to find out, as best they might, the most convenient methods of applying the commodity which we have contented ourselves with leaving at their doors, scarcely ever deigning to inquire, after the manner of an indefatigable tradesman, "What more can we do for you?" Need it, then, be a matter for surprise, if, neglected by their natural advisers, they fall an easy prey to ignorance and incapacity; and, tormented by unskilful devices, give vent to their dissatisfaction in the shape of loud complaints of the quality of the gas, wholly unmerited, but which none the less serve to cover the manufacturer with odium, and materially to check the development of his business. It is, however, satisfactory to observe, whatever cause may have operated to bring about the change, that a different feeling is now abroad, and that in many directions efforts are being made to bring about a better understanding with the consumer, by the dissemination of information as to the various purposes for which gas may be usefully employed, and also as to the correct principles that govern its economical combustion. Full of significance, likewise, is the fact that the attention of Parliament is about to be directed to applications for increased powers from some of the most influential of the Metropolitan Companies—applications, the necessity for which may not be altogether clear to the non-legal mind, accustomed to regard as sufficient the provisions of the Gas-Works Clauses Act, 1847, but of which the object is perfectly intelligible, and, perhaps, it may be permitted me to add, altogether praiseworthy. That all companies and corporations should be possessed of full powers for the supply to consumers of all kinds of gas fitting and heating apparatus, is a question of policy and convenience respecting which there can hardly be two opinions; while the further step of entrusting them with the exercise of a certain amount of control over all internal fittings, burners included, might be ventured upon with the certainty of its proving advantageous to all parties concerned. It is not, however, difficult to foresee that, in the enforcement of a code of rules as to the size and equality of fittings, even though framed, as it unquestionably would be, in the best interests of the consumer, a certain appearance of arbitrariness and interference with private interests could scarcely be avoided; and this, although productive of no real grievance, would not add to the popularity of the companies at the present time. But much may be done, in the immediate future, towards bringing over the public to their side, by a judicious exercise of the new powers that will certainly be granted them. In the meantime, we may wish them all success in their new enterprise, deriving encouragement to indulge in the most hopeful auguries for the future of our industry, from the prospect thus held out to us of witnessing in "fresh fields and pastures new" a reflex of those achievements by which has been built up and consolidated the most colossal gas enterprise the world has yet seen.

It would be unnecessary to dwell for more than a brief moment, in passing, upon the manifest advantage of the fuller employment of our mains during the daytime, were it not that speculation has of late been rife as to the probable effect of an extended use of gas for heating purposes, upon the incidences of its manufacture. We have been treated to ideal pictures of gas-works "running," with unbroken regularity, all the year round; of full gangs of stokers in constant employment; while the subtle aid of figures has been invoked to prove to the consumer how much he has to hope for from the utilization of plant which his own perverseness has hitherto condemned to comparative idleness during the greater portion of every 24 hours. I am to the last degree reluctant to disturb the harmony that prevails with regard to these pleasing anticipations; nor is it possible to suppose that I am wishful in any way to undervalue the importance of the movement now so happily set on foot; but a word, by way of caution, is evidently necessary, lest we be tempted to indulge in expectations which it is hopeless to expect can ever be realized. What is there, either in past experience or present necessities, to warrant the belief that the employment of gas for heating purposes can by any possibility be confined to warm summer weather? Granting all that can be urged as to its special convenience for cooking at a time when open fires are felt to be a nuisance, are we content that this should be the limit to its sphere of usefulness? Are we prepared to go to the consumer—it may be in the month of November, when he begins, perhaps, to think of his little dinners—and say to him, "We did not reckon upon having to supply your cooking-stove during our busy season; would you oblige us by disconnecting it until the spring?" That would certainly not be the way to encourage consumption; for the chances are that he would turn round and say, "If I cannot have the use of gas when I want it most, I am better without it altogether." And yet this would be but a logical outcome of the adoption of estimates founded upon a purely theoretical assumption. Before it can be said that any portion of our consumption yields us an exceptional rate of profit, we must be certain that such consumption does not or cannot, wholly or in part, follow us throughout the year. What is found to be the case in practice? In Birmingham, at any rate, we have been far from realizing the predictions of Mr. Henry Woodall. It is true that cooking-stoves induce a consumption in the summer months, which is found to be very welcome; but our experience is, that people who begin the good habit of cooking by gas in the summer time, are not, as a rule, inclined to leave it off as the winter approaches; and small blame to them for thus taking full advantage of its cleanliness and economy. At the same time, it is found that the consumption thus induced is a small matter as compared with that exclusively winter demand created by the constantly growing favour with which the public regard the use of gas for warming their houses, shops, and offices. Gas-fires consume far more gas than cooking-stoves, and ought to be encouraged to the greatest

possible extent. We do encourage them, and have done so for years. It must be a correct principle to encourage the use of gas for every purpose for which it is applicable; but by so doing we find ourselves unable to take credit for any differential rates of profit upon our gas supply. We are perforce content with that slow but sure diminution of costs which follows upon an increased production, however promoted; saddled, however, strange though the fact may sound, with the liability of a larger percentage of idle plant during the summer months. The following returns, which have been most courteously supplied me by the leading officials of the Companies and Corporations to which they refer, support this statement:—

In Liverpool, a town by no means remarkable for a large day consumption, the difference between the smallest and the greatest weekly consumption is in the proportion of	1 to 3·35
In Manchester it is	1 to 4·00
In Leeds it is	1 to 4·00
In Sheffield it is	1 to 4·00
In the district supplied by the Crystal Palace District Company—the nursery, so to speak, of cooking-stoves—it is	1 to 4·50
While in Birmingham, with probably the largest day consumption in the kingdom, it is (nearly)	1 to 5·00

Thus showing that the tendency of such consumption, in large towns at least, is just the opposite of what has been supposed.

Interesting, however, as these topics most naturally are, their attraction for us during the past year may be said to have been as nothing in comparison with that which was created, and, although in a lesser degree, is still maintained, by the advent, or, to speak more correctly, the re-appearance, of our terrible rival, the electric light. When, on a similar occasion, some twelve months ago, I had the honour of addressing you from this chair, the distant mutterings were only faintly heard of that impending storm which, gathering strength as it approached, burst with such relentless violence on that "black" autumn Monday when, in a lecture-hall in this town, the wonderful discoveries of Mr. Edison were first announced to an astonished and, for the most part, delighted world. The incidents that followed are still fresh in the recollection of every one. Day after day, prices, already on the decline, literally tumbled down, until within a very brief period gas property became depreciated to an alarming extent, and the belief seemed general that at length had come for the system of gas lighting the period of the sere and yellow leaf. Encouraged by the unmistakeable symptoms of popular favour towards the "rising sun" that were everywhere manifested, a host of electricians, with newly-furnished armour, some of it long laid aside and well-nigh forgotten, rushed into the field, eager to win renown as the champions of the new creed, or, it may be, to reap for themselves golden harvests in the time-honoured character of Prince Hamlet's courtiers. For, indeed, it seemed as if the public, ever on the look-out for some new thing, were bent upon giving extravagant welcome to the new comer; so that, not to be thought behind-hand, the Governors of our Metropolis caught up the expiring Jablochkoff candle, and raised it aloft for a nine-days wonder upon the Holborn Viaduct and the Thames Embankment; erewhile transplanting it, fresh from the gay and refined atmosphere of Paris, to the uncongenial soil of Billingsgate Market. Simultaneously the idea was conceived, by an enterprising landowner, of advertising by its means an obscure watering-place; while throughout the length and breadth of the land, the caterers of public amusements, true to their calling, vied with each other in their endeavours to gratify their patrons with an exhibition of the latest novelty.

During the acting of this eventful drama, what was the effect upon probably the most interested portion of the spectators of it? Gas shareholders, as we all know, were seriously alarmed, and many of them have paid the penalty of their fears. But what has been the attitude of directors and managers, whose positions and occupations should render them peculiarly fitted to form a correct estimate of the probable consequences of innovations that threaten? Have they remained steadfast to their vocation, believing that coal gas is deserving of a future, come what may? Have they, strong in the knowledge of the resources of their industry, realized the fact that competition cannot mean ruin, nor even disaster, if it should stimulate to renewed exertions, in the consciousness of the vast field left untouched by previous effort? For the most part, the answer is truly in the affirmative. Many there are whose ripe experience has enabled them to bid defiance to the fears by which they have been surrounded, or whose sagacity has risen superior to the vague expectations of the majority. But others, again, it must be confessed, have sought counsel of their fears, and called it prudence; and thus they have been driven to temporizing—to staving off the inevitable—to running the risk of inability to meet the demands of an ever-increasing business, by withholding the means required for necessary extensions, and even to coquetting with the electric light, as though it were not mischief enough to paralyze their forces by inaction, but they must needs add to it by contemplated desertion to a hostile camp. I use the expression "hostile" advisedly, because it seems to me impossible to conceive of any middle course in this matter, in the interests either of the gas shareholders or of the public. It has, no doubt, been urged by electricians, as a reason why no antagonism need exist, that the spheres for the employment of gas and electricity lie widely apart; and with this expression of opinion we can have little difficulty in agreeing. But what, may be asked, has been the object of recent efforts, if not to wrest from our possession territory hitherto considered to be exclusively our own? Are we not justified in concluding that this attack, upon what may be called our outposts, was intended but as the prelude to the storming of the citadel? Some of our friends, however, recommend us to avoid extremities, and to come to terms with the invader. They say that there is not so much difference between us after all, and that we may very well form an alliance, seeing that gas companies were formed not exclusively for the supply of coal gas, but for that of any other suitable means of illumination. If this be so, then it is a fact that has remained latent until now; for surely the relationship hitherto subsisting between ourselves and all other purveyors of artificial light has been one of antagonism, qualified by our own apathy or indifference. What, then, is there in electricity that should make it an exception to the rule—that should encourage the belief that the two systems can be made to work harmoniously together, unless, indeed, upon the footing contemplated by the ambitious designs of Mr. Edison, of conqueror and conquered? Whatever may come of the electric light, of this we may be tolerably certain, that for the present, at least, our energies will be best confined to the development of our legitimate business. We cannot serve two masters; and so, when people go about asking, "What are we to do about this electric light?" one is reminded of the famous reply of Lord Melbourne, "Can't you let it alone?"

Another phase of the question inevitably presents itself. In courting transformation at the hands of some indulgent Parliamentary Committee—if there should exist such a phenomenon—do we not betray an undue, if not altogether unnecessary anxiety as to the future? It can hardly be said, even by its most enthusiastic advocates, that the chances of success for the electric light are such as need excite apprehension in the minds even of the most timid of gas shareholders. So much, however, has recently been said and written upon the subject of the shortcomings of the new illuminator, that I will not run the risk of wearying you by the repetition of an oft-told tale. Suffice it to say that, while in special cases, as where a light of considerable intensity is required, it is likely to do excellent service; yet the impossibility of storing or measuring the electric current, its cost of production, subdivision, and distribution for light-giving purposes, are now, as ever, a formidable barrier to its general employment. It may be that Mr. Edison has succeeded in overleaping this, or that scientific discovery will eventually achieve a complete triumph over the difficulties of which it is composed; but, granting all this to be possible of accomplishment, there would still remain, in the quality of the light itself, a lurking danger to its permanent establishment, not less real, because, to a considerable extent, overlooked in the novelty by which it has hitherto been surrounded. To the practised eye, a lack of the power of diffusion has been painfully apparent at nearly all the trials that have been made of the electric light in this country. It is this that occasioned the discontent of the Billingsgate fish salesmen; that enables the tiny gaslights on the Thames Embankment to outshine, during a fog, the 200-candle Jablochkoff lamps; that, at the Birmingham Agricultural Show, rendered almost indistinguishable objects placed only a few yards distant from a powerful Serrin lamp; and that marred the enjoyment of the spectacle at the Birmingham Town Hall a few nights ago. This inherent defect may, it is true, be overcome, to a certain extent, by more lavish appliances; but, having regard for all the purposes that artificial illumination is required to serve, it seems by no means improbable that, all other obstacles overcome, this one will remain to make shipwreck of the fair hopes that have been founded upon the presumed adaptability of electricity for a more extended sphere of usefulness.

Although it is probable that few people have shared in what may be termed the insane eagerness manifested by the leading journal to "bid good-bye to gas," yet the attitude of the public Press generally, during the last few months, may be considered to have been fairly representative. "Light! more light!" was the craving of the material, no less than of the intellectual being, long before expression was given to it by those memorable words of dying Goethe. "Light! more light!" is the meaning of that chorus of welcome which hailed the prospect of a yet greater deliverance from the bondage of night. Shall the lesson of this time be lost upon us? Shall we not attune ourselves in harmony with the chord which has been struck with so much effect, and show, after the manner of the esteemed Past-President of our Parent Association, that whatever has been achieved by electricity in the improved lighting of our streets and buildings, can be better and more cheaply accomplished by the agency of coal gas? We cannot, if we would, stem back the tide of scientific progress—far from us be the wish, or even the thought!—but if we have to confess ourselves beaten, let it be by a foeman worthy of our steel; not by the cold, pale gleam of an artificial moon, possessing few, if any, of the elements of permanence. A rich inheritance is ours, bequeathed to us through the industry of our predecessors. We are charged no less by the respect that is due to their memories, than by a regard for our own reputations, to hand this down undiminished, and, if possible, augmented, to our successors. We will, then, no more indulging in unhealthy regrets for a past that has not been barren, apply ourselves with renewed diligence to our calling, that so its future and ours may be assured.

The address was well received, and it was decided that the same should be printed and circulated amongst the members.

At its conclusion, a paper was read by Mr. T. Layton, of Redditch, on "Meter Rents;" the general policy of charging for them being the subject of an interesting discussion. It was the general feeling that it is inexpedient and injurious to the best interest of gas companies and corporations to continue this charge.

The proceedings terminated with a very cordial vote of thanks to the Chairman.

THE NEWPORT (MON.) GAS-WORKS BENEFIT SOCIETY.

The Fourth Annual Dinner of this Society took place on Monday, the 3rd inst.—Mr. T. Canning, the Engineer of the Company, presiding. The vice-chair was taken by Mr. J. Whitefield, and about 100 of the *employés* and their wives sat at the tables. After the usual loyal and patriotic toasts,

Mr. Whitefield gave "Success to the Newport (Mon.) Gas Company," and, in doing so, said that when he entered the Company's service in 1855, they had not nearly so much accommodation as they now possessed. He wished to say a good word for the stokers employed at the works, because when a company had good and efficient workmen, improved machinery, &c., they could not but succeed. The Company had this winter stored more gas in two hours than they formerly could in thirty-six.

The Chairman said he had great pleasure in responding to the toast. A great statesman had said, "Nothing succeeds like success;" and, if that maxim applied to gas and gas companies, he might say that they could make use of it in connection with the Newport Gas Company, for their career had been a brilliant success. He then referred to the recent electric light "scare," and said that if, in the future, the progress of the electric light stimulated gas invention and the progress of gas industry, it would be a very good thing. Without in any way disparaging electricians or electricity, he could say they well knew that the electric light could not compete with what was so convenient and so cheap as gas. The electric light had been discovered more than 70 years ago by Sir Humphry Davy; and since that period, which had made the greater progress—gas or electricity? Both lights were the children of science, and both had a future before them. But, supposing the electric light had been perfected, and that, like gas, it could be supplied to the whole town from a central station, he maintained that it could not be used against gas. Electricity had to be brought for use through the medium of copper wire, and that wire was very expensive to produce and lay. He had gone into the question a little, and to lay down the wires which would, with electric light, take the place of the gas-pipes in Newport, so as to supply with electric light all the places now lighted with gas, would cost £216,000. Now, although they, as gas producers, did not say that the same pipe would bring to the consumers of gas, heat and motive power as well as light, yet it did so. They had fixed many gas-fires and stoves in the town, and a number of gas-engines, two of which he would specially mention, as they had been placed at the Alexandra Dock to produce the electric light. But gas would not supersede steam, any more than electricity would supersede gas. The old maxim contained a good deal of truth—"There's room enough for all." He again thanked them for responding so heartily to the toast.

The toasts of "The Chairman and Board of Directors of the Newport Gaslight Company," "The Mayor and Corporation of Newport," "The Health of the Manager of the Works and the Treasurer of the Society, Mr. T. Canning," and "The Officers of the Newport Gas Company," were proposed and responded to.

The Chairman then gave the toast of the evening—"Prosperity to the Newport Gas-Works Benefit Society." He said he was especially happy in proposing this toast, because they, as workmen, had formed and were

themselves carrying on the Society. He need not refer to the benefit of the Society, as the present *réunion* was a proof of it. In founding the Society, they had done what was good for the true interests of the working man, and had disregarded all connection with the "paid agitators" who had driven some of the trade of the country away to foreign competitors.

Mr. WHITEFIELD, in responding to the toast, said he was very happy to say that on this, their fourth year, he had a very good report to present. The contributions for the last six months were £26 16s. 8½d., and, with the £6 previously in hand, it made £32 16s. 8½d. At the commencement of the year there was a balance in the bank of £6; twelve months contributions from 61 members, £45 5s. 8d.; entrance fees, &c., £2 10s. 5½d.; donations, £6 16s. 7d.; interest, 4s. 11d.—total, £60 17s. 7½d. This was the largest and best balance-sheet the Society ever had. The disbursements were—247 days sick pay to 13 members, £13 11s. 10d.; children's funerals, £2; to members on leaving the works, 13s. 6d.; printing and stationery, £1 4s. 11½d.; balance left in bank, £6; paid out to members as dividend, £37 7s. 4d.—total, £60 17s. 7½d. There was then a balance in hand of £28 6s. 7½d. The fact that they paid a dividend to themselves of 100 per cent. proved that they were successful when the Company were successful. They had made several donations towards good objects, and now they had a balance in hand of £28 6s. 7½d. He thought this was very fair for a small Society.

Other toasts followed, and the evening's entertainment terminated in good time.

THE LANCASHIRE COAL AND IRON TRADES.

(FROM OUR OWN CORRESPONDENT.)

Generally a less active demand is reported for coal in this district, and although there is no material alteration in quotations, buyers are beginning to press for concessions which, in some cases, colliery proprietors are not able to resist. A few inquiries have been coming into the market for gas coal for next season's requirements, but, as it is as yet very early for anything to be done in this description of fuel, it is probable they are more for the purpose of testing the market than with the view of any actual business at present. So far as I can ascertain, colliery proprietors would not be indisposed to enter into contracts for next season at about present prices, which are slightly in advance upon those ruling last summer; but generally they would prefer to take their chance in the market later on, than at present enter into engagements at the low figures which were being accepted when last year's contracts were made. So far, however, as the present indications of the market are concerned, it does not seem probable that sellers will be able to command any better prices this year rather than last, as, notwithstanding the severe winter, heavy stocks are still left on hand at many of the collieries, and many of the mines are not being worked at all. For house-fire classes of coal a tolerably good demand is still kept up, but there is no push of orders. In other classes of fuel the market is very dull; common coal for steam and forge purposes meets with only a very limited inquiry; burgy is abundant, and slack more or less a drug and bad to sell. The quoted prices at the pit mouth are about as under:—Best qualities of Arley for house-fire purposes, 9s. to 10s. per ton; second and ordinary qualities, 7s. to 8s.; good Pemberton four-feet, 7s. 6d. to 8s.; common screened coal, 6s. to 6s. 6d.; steam and forge coal, 5s. 3d. to 5s. 6d.; burgy, 4s. to 4s. 6d.; good ordinary slack, 3s. to 3s. 6d., but inferior qualities are being pushed at extremely low figures, and in some cases could be bought at as low as 2s. per ton.

There is still a fair demand for shipment, but business in this branch of trade is much interfered with by the strike at Liverpool.

The iron trade is still without improvement. Lancashire makers of pig iron, although they are quoting prices which do not cover the cost of production, can secure no business, as they are altogether undersold by outside brands. In the finished iron trade, not only is there extremely little new business coming to hand, but manufacturers cannot now get merchants to specify for the orders they have already placed, and it is with great difficulty that many of the works are kept going at all. Quotations, nominally, are without change, but as there is a keen competition for the smallest order, any business done is at the minimum of prices.

THE COAL AND GENERAL TRADE OF THE NORTH OF ENGLAND.

(FROM OUR OWN CORRESPONDENT.)

The gas coal trade of the county of Durham has been rather dull over the past eight or ten days. There has been a falling away of shipments by steamers to London; but a somewhat better trade to the ports of the British Channel. A few more cargoes of gas coals have likewise been shipped to Ireland and to the North of France. Some few gas contracts have been entered upon for the Baltic. A contract was made last week for about 20,000 tons of gas coals to be delivered to the Swedish Gas Company over the season. The prices are unchanged. The wages question amongst the miners of the county of Durham is still unsettled; but it is fully anticipated that it will be arranged without any disturbance of work. The second-class gas trade is dull. Prices are very poor. The demand is entirely for best qualities for shipment. Part second-class gas goes into local consumption. The demand for house coals is falling off considerably; but there is an improvement in the steam coal business.

The coasting freights are down. Steamers to load for London were paid as low as 4s. per ton last week, and boats engaged to convey gas coals to the North of France, Ireland, or the British Channel, were chartered at equally low rates. It is pretty clear that coasting freights, by steamers and sailing vessels, will favour the shippers over the spring. The freight paid small sailing ships to discharge at the wharves in London river is 6s., and, in some instances, 6s. 3d. Rates are low for small vessels to load coals for the east coast, and the British Channel.

We noticed last week that the general manufacturing trade of the North of England showed a slight tendency towards improvement. It was pretty well maintained last week. Chemicals showed a slight advance in price, and there was a stronger demand for the better qualities of fire-clay goods for shipment. The pig and general iron trades of the North of England do not improve very much. Several small lead mines are about to be closed; but there have been large deliveries of bar lead from Spain over the last month, and more is anticipated. Lead is cheap. Foreign lead seems to be driving north country lead out of the market.

TRADE NOTES FROM SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The annual meeting of the Kilmalcolm Gas Company was held a few days ago, when it was agreed to reduce the price of gas from 9s. 2d. to 8s. 4d. per 1000 cubic feet. This is the second reduction within a comparatively short period. At the same meeting a dividend of 4 per cent. was declared.

By request of the Council of the Philosophical Society of Glasgow, Dr. Wallace has agreed to repeat before that body, on Wednesday evening next, the lecture on "Gas Illumination" which he recently delivered to the Chemical Section of the Society of Arts, London. I understand that some new experiments in gas lighting are to be introduced by the lecturer. Arrangements have been made to exhibit in operation during the evening two of Sugg's new "London" Argand burners—of 100 lights and 200 lights respectively. I may incidentally remark, on this point, that one of Sugg's 50-light burners has yielded some good results with the rich cannel gas made at the Coatbridge Gas-Works, and that the Directors were very much pleased with the results.

The people of Dundee have been treated to two or three more exhibitions of the electric light during the past week, all of which were fairly successful. Referring to these and other experiments in artificial illumination, the Editor of the *Dundee Advertiser*, who has given a vast amount of attention to the subject, says that the Dundee people have seen enough of the electric light to convince them that, although it may be the light of the future, it is not likely to be the light of the present. He goes on to say: "It is too uncertain, wavering, and sputtering; too liable to derangement and extinction; too dazzling and too spectral, even for public use; while for private purposes it and its appliances would be simply intolerable." He strongly urges the propriety of Gas Commissions and Companies everywhere following the example of the principal London Gas Companies, in showing how the streets can be lighted, if the ratepayers are willing to pay for the requisite amount of gas.

On Tuesday last, Sheriff Blair, Inverness, conducted, at the instance of the Home Secretary, a public inquiry into the expenditure of the Inverness Gas and Water Supply undertakings, since they passed into the hands of the Municipal Authorities, and regarding the manner in which it is proposed to expend the money, powers to borrow which the Police Commissioners are now applying for by a Provisional Order. The Provost, Town Chamberlain, and Treasurer were examined, and stated that the past expenditure had exceeded the borrowing powers by £9000. They had expended £90,000, whereas they had powers under their Act of 1875 to borrow only £81,000—£40,000 on account of gas, and £41,000 on account of water. They stated that more money was now required to meet expenditure which they never contemplated when the Gas and Water Act was passed, and to carry on extensions of works necessitated by the rapid increase of the town. Mr. Thomas, Gas Manager, who was also examined, said that the yearly consumption of gas in Inverness was 16¼ million cubic feet, and that it was increasing every year.

There was not much business done in gas shares during the past week. Glasgow Corporation Gas Annuities, both 9 per cents. and 6¾ per cents., remained firm throughout the week, the former at £208 and the latter up to £156. On Monday, some 6¾ per cents. changed hands at £154¼. Business was done on Monday, in Edinburgh and Leith Gas Company's shares, at £30, and on Friday at £30½. On Wednesday, Edinburgh Gas Company's shares were disposed of at £46, and on Friday at an advance of £1.

The Castle Douglas Police Commissioners are desirous of getting the water supply of the town improved and extended, and they recently applied to the Home Secretary for a Provisional Order to put the Lands Clauses Consolidation Act into force. In obedience to instructions from the Home Office, an inquiry in connection with the matter was held last Tuesday, by Sheriff Nicolson. In the meantime, borrowing powers are wanted for £5500 for a gravitation water supply.

A meeting of the Edinburgh Water Trust was held last Thursday, when a report was presented from the Engineers (Messrs. J. and A. Leslie), as to the state and progress of the Moorfoot Water-Works. The leading feature of the report was, that the long continuance of the frost and the snowstorm had practically stopped all work from the 24th of November till within the past few days.

The Glasgow Corporation Water Commissioners met last Thursday, and amongst the various reports which they had under consideration, there was one from the Sub-Committee on District Meters, &c., which gave the following results of the night inspection by the aid of the meters:—Total average per head at starting the meters, 49·0 gallons per 24 hours; ditto on 8th of January, 1879, 35·6 gallons—saving 13·4 gallons per 24 hours. Total population of district under inspection, 81,432; which, by multiplying by 13·4, shows a saving of 1,096,682 gallons per 24 hours.

On behalf of the Lochgelly (Fifeshire) Police Commissioners, the Board of Supervision have recommended the Public Works Loan Commissioners to lend £5000, to enable them to carry out a new water supply scheme.

The ratepayers of the town of Lanark have recently had a *plébiscite* on the water-supply question. The result of the vote was—In favour of the proposed scheme, 450 votes; disapproved, 123; neutral 60.

A good business was done in pig iron in the Glasgow warrant market during the past week, and a decided desire to buy was manifested, the low price being a great inducement. Business was done in warrants on Friday, at 42s. 9d. cash, and 42s. 10d. one month. Trade is almost at a standstill in the manufactured iron department.

The Glasgow coal market is still without change, business being very quiet in all departments. Owing to the milder weather which has set in, the demand for house coal has somewhat fallen off. The shipping trade continues to be very inactive, and there is no appearance of improvement.

WE have been asked to state that Messrs. Thomas Piggot and Co., of Birmingham, have recently opened a London office at No. 97, Cannon Street, and are there represented by Messrs. James E. and Samuel Spencer, the latter of whom long held a similar connection with the Horseley Company, Limited, of Tipton.

CHATHAM AND ROCHESSTER GAS COMPANY.—At the half-yearly meeting, on the 6th inst., the usual dividends on the various classes of shares were declared.

WORCESTER GAS COMPANY.—At the half-yearly meeting, on the 31st ult., the usual dividend of 10 per cent. per annum was declared on the £10 and £2 shares respectively.

LISKEARD WATER-WORKS COMPANY.—At the annual meeting of this Company, held on Thursday, the 13th inst.—Mr. Augustus Bazely presiding—the accounts were adopted, and a dividend of 7 per cent. was declared, being an increase of 1 per cent. on that paid last year.

ALFRETON GASLIGHT AND COKE COMPANY.—At the annual general meeting of this Company on Tuesday, the 11th inst.—Mr. J. Roberts in the chair—the accounts were submitted and approved, and a dividend of 10 per cent. was declared.

THREE PEOPLE SUFFOCATED BY GAS AT BRADFORD.—On Monday, the 3rd inst., a serious fire, resulting from an explosion of gas, occurred at Bradford. On the premises being searched afterwards, the bodies of the proprietor of the house, his son, and a servant girl were found. At the inquest on the bodies, the evidence given tended to show that death was in each case caused by suffocation from an explosion of gas, and the jury returned a verdict to that effect, adding, "but how the escape of the gas occurred we have no evidence to show."

THE WATER SUPPLY OF DURHAM.—A special meeting of the Urban Sanitary Authority of the Durham Town Council was held on Monday, the 10th inst.—the Mayor presiding—to receive a report from the Water Supply Committee on the Bill about to be introduced into Parliament by the Weardale and Shildon Water Company. After a good deal of preliminary discussion, it was resolved that the matter should be debated in private. It has, however, transpired, that it was eventually agreed that the Council will not oppose the Bill.

THE PROPOSED PURCHASE OF THE NEWINGTON (YORKS.) WATER-WORKS.—A special meeting of the Newington Local Board was held on Monday, the 10th inst., under the presidency of Mr. Walton, when deputations attended on behalf of the North-Eastern Railway, and as representatives of three public meetings held in the district, to memorialize the Board against the proposed purchase by them of the water-works. Mr. Garbutt moved that the memorials be referred to the Water-Works Committee. This was seconded by Mr. Williamson, and lost. The Chairman then moved—"That the resolution passed by the Board at the last meeting, requesting the Local Government Board to sanction the purchase of the property of the Newington Water-Works Company, Limited, be, and is hereby rescinded." Mr. Sanderson seconded the motion, and it was carried. Notice was, however, given by Mr. Jennings that at the next meeting of the Board he should move that this resolution be rescinded.

IMPROVED STREET LIGHTING AT BURY ST. EDMUND'S.—We (*Bury St. Edmund's Free Press*) had pleasure in observing an interesting experiment which was made last Thursday evening in the lighting of our town. The Gas Company, following the example of the London Gas Company, have erected a large ornamental lamp at the junction of the Butter Market and Abbeygate Street, within which is one of Sugg's three-ring Argand burners, which passes 30 feet per hour, giving an illuminating power equal to 120 candles, each candle consuming 120 grains of sperm per hour. It will be seen that while it consumes six times the quantity of gas consumed in an ordinary lamp, it gives nearly eight times the light. The effect of the experiment was very pleasing and thoroughly successful. Such experiments made by the Gas Company are very commendable; and we think it only fair to say that credit is due to Mr. John M'Crae, the Gas Company's Engineer. Further experiments will shortly be made in front of the Corn Exchange.

Register of New Patents.

APPLICATIONS FOR LETTERS PATENT.

454.—HIGGS, R. W. H. P., King William Street, London, "Improvements in means and appliances for electric lighting." Feb. 5, 1879.

465.—SUSSEX, S. W. M. DE, Brussels, "Improvements in buoys exhibiting electric light, and in batteries for generating electricity for this and other purposes." Feb. 5, 1879.

494.—LAWRENCE, J. P., St. Mary Axe, London, "Improvements in or applicable to lamps." A communication. Feb. 7, 1879.

503.—WHEELER, A., Oxford, "Improvements in apparatus for supplying water to water-closets, baths, lavatories, and for other flushing purposes." Feb. 8, 1879.

508.—WEYDE, H. VAN DER, Regent Street, London, "Improvements in shades or lanterns for electric or other lights." Feb. 8, 1879.

523.—BOUSFIELD, E. T., Bedford, and BOUSFIELD, W. R., Bristol, "Improved apparatus for obtaining electric currents and means for obtaining light from electric currents." Feb. 10, 1879.

539.—HINRICHS, C. F. A., New York, U.S.A., "Improvements in lamps." Feb. 11, 1879.

540.—DONALD, W., jun., Paisley, N.B., "Improvements in and connected with gas-engines." Feb. 11, 1879.

546.—HARFORD, P., St. George Street, London, "Improvements in lanterns and lamps." Feb. 11, 1879.

PATENTS WHICH HAVE PASSED THE GREAT SEAL.

3334.—ATKINS, T., Clapham, London, "Improvements in the construction and arrangement of machinery and apparatus for the manufacture of compound carbonaceous materials and gases generated therefrom, for increasing the illuminating power, and purifying coal gas, and in using and applying the products derived therefrom to various useful purposes." Aug. 24, 1878.

3468.—GIROUD, H., Paris, "Improvements in rheometric gas-burners." Sept. 2, 1878.

3999.—GOODSON, H. E. T., Fulham Road, London, "Improvements in pressure-reducing valves for gas, steam, or water pipes." Oct. 10, 1878.

4456.—HIGGINS, F. H. W., Cornhill, London, "Improvements in apparatus for producing, maintaining, and subdividing electric light." Nov. 4, 1878.

4466.—STEWART, C., Islington, London, "Improvements in distributing electricity for the production of electric lights." Nov. 5, 1878.

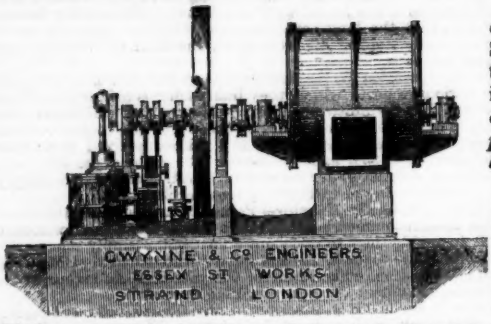
4626.—FOX, ST. G. L., Telegraph Street, London, "Improvements in the means or apparatus for obtaining light by electricity, and distributing, regulating, and measuring the electric currents for the same." Nov. 14, 1878.

4730.—GENT, J. S., Manchester, "Improvements in gas-burners." Nov. 21, 1878.

4847.—CHEESBROUGH, F. J., Liverpool, "Improvements in and relating to electric lamps, and to a method of charging such lamps with an artificial atmosphere, and purifying the same; and to the production of a carbon for use in electric lamps, and for other electric purposes." A communication. Nov. 28, 1878.

The GRAND MEDAL of MERIT at the VIENNA EXHIBITION, TWO MEDALS at the PHILADELPHIA EXHIBITION and TWO MEDALS at the PARIS EXHIBITION, have been AWARDED to GWYNNE & CO. for GAS-EXHAUSTERS, ENGINES, and PUMPS; Also 27 OTHER MEDALS AWARDED at all the GREAT INTERNATIONAL EXHIBITIONS.

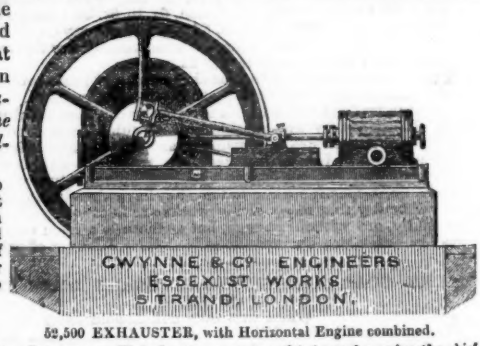
GWYNNE & BEALE'S PATENT GAS-EXHAUSTERS & ENGINES.



EXHAUSTER with Trunk Engine, capable of passing 210,000 cubic feet per hour.

The Judges report on the combined Exhauster and Steam-Engine exhibited at the Philadelphia Exhibition is—"*Reliable compact Machine, well adapted for the purpose intended, of excellent workmanship.*"

GWYNNE & CO. have made the largest and most perfect Gas-Exhausting Machinery in the world, and have completed Exhausters to the extent of 8,000,000 cubic feet passed per hour, of all sizes from 2000 to 210,000 cubic feet per hour.



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GWYNNE & CO. do not pretend to enter into a struggle with other makers in respect to cheapness. They have never sought to make price the chief consideration, *but to produce machinery of the very highest quality, and most approved design and workmanship.* The result is that in every instance their work is giving the fullest satisfaction. Numerous testimonials and references can be given to Companies using their Machinery for years past.

Exhausters, with or without Engines combined, can be made to pass the gas WITHOUT OSCILLATION OR VARIATION IN PRESSURE Regulators, Bye-Passes, Stop-Valves, Gas-Valves, Station Governors, and Gas Machinery of all Sizes.

PLEASE ADDRESS IN FULL, GWYNNE & CO., Hydraulic and Gas Engineers, ESSEX STREET WORKS, VICTORIA EMBANKMENT, LONDON, W.C., ENGLAND.

Gwynne & Co.'s New Catalogue on Gas-Exhausting and other Machinery may be obtained on application at the above Address.

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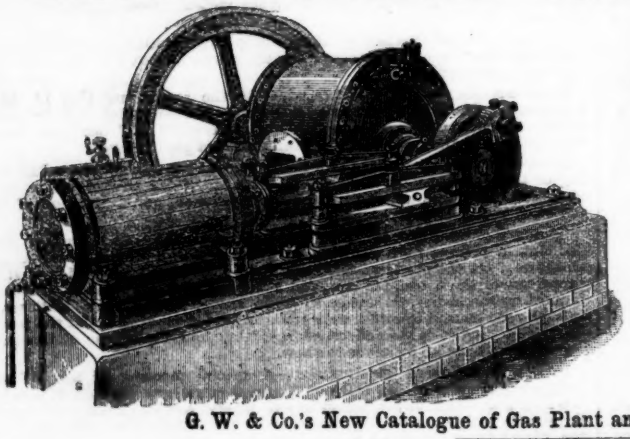

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MAKERS OF ENGINES, EXHAUSTERS, INDEX AND DISC GAS-VALVES, HYDRAULIC MAIN VALVES, BYE-PASS VALVES, TAR, LIQUOR, AND OTHER PUMPS, SCRUBBERS AND PURIFIERS, CONDENSERS, BOILERS, &c.

G. W. & Co.'s New Catalogue of Gas Plant and Machinery can be had on application.

Phœnix Engineering Works:

HOLLAND STREET, SOUTHWARK, S.E.

WANTED, to Purchase, one of Clegg's Treatise on Gas. Also one of Peckston's Practical Treatise on Gas Lighting.
Send lowest cash price to A. THOMAS, BASINGSTOKE.

WANTED, Two leading Stokers, used to Scoop Work. Wages 30s. per week. To steady men constant employment can be given.
Apply to MANAGER, Gas-Works, WINCHESTER.

WANTED, by a young Man, aged 22, who has had five years experience in a Provincial Works (make, 75 millions), a SITUATION in a Gas-Works. Can use Photometer, fair Draughtsman, good Writer, quick at figures, and thoroughly understands general routine.
Apply S. I. C. E., 54, Hardress Street, RAMSGATE.

WANTED, a Situation as Gas Manager. Had over 20 years experience, and 8½ years in present employment. Understands all branches connected therewith. Good testimonials. Satisfactory reason for change.
Address No. 522, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED, by Samuel Thompson & Co., Colliery Office, Lancaster, APPLICATION for PRICES from Gas Managers who are prepared to receive Tenders for GAS COAL or CANNEL.
John Leigh, Esq., M.R.C.S., F.C.S., &c. &c., in his analytical report of S. T. & Co.'s Coal, says: "It is remarkable for its purity, I have scarcely ever examined a Coal containing so small a quantity of ash, and when Cannel of the best description is scarce, it may well replace this material."

WANTED, by a Young Man (married), a Situation as MANAGER, or Secretary and Manager, of a small Gas-Works, or Assistant in a larger one. Has had considerable experience in the Manufacture and Distribution of Gas in all its branches; five years sole Manager. No objection to any place in the United Kingdom. Satisfactory reasons for change. Unexceptional references and testimonials.
Address, in first instance, No. 526, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

WANTED immediately, a Manager for a small Gas-Works at St. John's in the West Indies. The consumption is about 8 million cubic feet. The person appointed must be thoroughly practical in every department, and a very temperate man. He must already have had the sole charge of similar works, and be able to produce good references. A married man without family and who could speak Spanish would be preferred. Salary £250 per year, with house, &c., free, and a further increase contingent on results. Passage out and home, and the engagement for three years.
Address No. 525, care of Mr. King, 11, Bolt Court, Fleet Street, LONDON, E.C.

WANTED, by the Swindon Gas and Coke Company, a Secretary and Manager for their Gas-Works, producing about 9 millions per annum. He must have a thorough knowledge of everything connected with the Manufacture and Sale of Gas, Laying Mains and Services, the Inspection of Meters, &c.; be able to keep the books of the Company (by double entry), and take the minutes of the Directors meetings. Salary £100 per annum, with house, coal, and gas free. He will be required to enter upon the duties of the situation on May 12, 1879.
Applications, in writing, with testimonials, and stating the age of the applicant, number in family, and present situation, to be sent to me on or before March 3, 1879,
HENRY HUNT.
Gas-Works, Swindon, Feb. 15, 1879.

MANAGER of Tar and Ammonia Dis- tillery will be disengaged on the 10th of February, and will be open for RE-ENGAGEMENT.
Advertiser has a good practical knowledge of the business, and is a steady, energetic man.
Address No. 520, care of Mr. King, 11, Bolt Court, FLEET STREET, E.C.

NEW WINDSOR URBAN SANITARY AUTHORITY.

THE New Windsor Urban Sanitary Authority are prepared to receive Applications from Competent Persons for the situation of ENGINE DRIVER and to take charge of the machinery at the Sewage Works of the Authority, at the Ham, Old Windsor. Wages 33s. per week, with residence and coals found.
Applications, in candidates own handwriting, stating age and previous experience, and giving references, to be sent, under sealed cover, to the office of the Clerk of the Authority, 1, Sheet Street, Windsor, before twelve o'clock noon, on Tuesday, the 25th day of February inst. No personal applications will be allowed.
CHAS. THOS. PHILLIPS, Clerk.
1, Sheet Street, Windsor, Feb. 10, 1879.

TENDERS FOR NEW PURIFIERS WANTED.

THE Gas Committee of the Corporation of Blackpool are prepared to receive TENDERS for the Supply of a Set of Four New PURIFIERS, each 20 ft. square, fitted with everything complete.
Plans and specification may be seen at the office of the undersigned.
Tenders endorsed on the outside, and addressed to the Chairman of the Gas Committee, must be sent in by Monday, the 24th of February next.
The Committee do not bind themselves to accept the lowest or any tender. By order,
JOHN CREW, Engineer and Manager.
Gas-Works, Blackpool, Feb. 8, 1879.

GODALMING GAS-WORKS.

A Set of three 6 ft. square Purifiers, Sieves, Lifting Gear, and Centre Valves, all complete, in good condition, and has been in full work up to last summer, made by Cockey and Son, Engineers, Frome, is now for Sale cheap. Larger ones having been erected, is the cause of their being sold.
For further particulars, apply to Mr. A. COLFUS, Gas-Works, GODALMING.

TO GASHOLDER MAKERS.

THE Oldham Corporation Gas-Works Committee invite TENDERS for Supplying and Erecting One TELESCOPIC GASHOLDER, 100 feet diameter, at their Higginshaw Gas Station.
Plans and specification can be seen on application to Mr. Herbert Andrew, Gas and Water Offices, Oldham.
Tenders to be sent in on or before Tuesday, the 25th inst.
By order,
Oldham, Feb. 6, 1879. H. BOOTH, Town Clerk.

TENDERS FOR TAR AND AMMONIACAL LIQUOR.

THE Directors of the Mirfield Gas Com- pany, Ravensthorpe, are prepared to receive TENDERS for the TAR and AMMONIACAL LIQUOR produced at their Works for One year, from April 1, 1879, to March 31, 1880. Coals carbonized, about 5000 tons per annum.
Tenders to be sent in at per ton, separately, not later than Monday, the 3rd of March, endorsed "Tender for Tar," or "Ammoniacal Liquor," to
SAMUEL DAY, Secretary.

EXETER GASLIGHT AND COKE COMPANY.

AMMONIACAL LIQUOR—EXTENSION OF TIME.

THE Directors of the Exeter Gaslight and Coke Company having received applications for an Extension of the Time of Contract, are now prepared to receive TENDERS for either One, Three, or Five years, from the 25th of March next.
Contractors to state price, at per 1000 gallons of 6 degrees Twaddell, and the extra price they are prepared to give for every additional half Twaddell strength of liquor, delivered into tank at the Company's Works; and sealed tenders, endorsed "Tender for Ammoniacal Liquor," to be sent to me (the undersigned), on or before Saturday, the 1st of March next.
The Directors do not pledge themselves to accept the highest or any tender. By order,
W. A. PADFIELD, Secretary.
Gaslight Offices, Exeter, Feb. 13, 1879.

BOROUGH OF HALIFAX.

EXHIBITION OF GAS-STOVES, ENGINES, BURNERS, &c.

THE Gas Committee of the Halifax Cor- poration having decided to hold an Exhibition of all kinds of Appliances for the Economic Use of Gas for Domestic and other Purposes, they will be glad to receive applications from Engineers and Manufacturers who desire to exhibit. It is intended to hold the exhibition during the first week in April; room, gas, and connections being provided by the Gas Committee.
Printed forms of conditions may be had from the undersigned, and all applications for space, from parties wishing to exhibit, must be made to me on or before the 15th of March.
WM. CARR, Engineer and Manager.
Halifax, Feb. 17, 1879.

BARNET DISTRICT GAS & WATER COMPANY.

NOTICE is hereby given that the ORDINARY HALF-YEARLY GENERAL MEETING of the PROPRIETORS of the above Company will be held at the Guildhall Tavern, Gresham Street, in the City of London, on FRIDAY, the 28th day of February, 1879, at One o'clock in the afternoon precisely, to receive the Report of the Directors, and the Accounts for the half year ending the 31st day of December last, to declare a Dividend, to elect Directors in the place of those retiring by rotation, and to fix the remuneration of the Directors, also to elect two Auditors and fix their remuneration, and to transact the general business of the Company.
The Transfer Books will be closed from the 15th to the 28th inst., both inclusive
By order of the Board,
ALFRED LASS, Secretary.
Offices, 33, Gracechurch Street, London,
Feb. 7, 1879.

WESTON-SUPER-MARE GASLIGHT AND COKE COMPANY.

TO BE SOLD BY TENDER, a quantity of GAS PLANT suitable for a medium-sized Gas-Works, consisting of a 30 ft. Gasholder, together with one Station-Meter. Capacity, 5000 ft. per hour, with three 8-in. Valves and connections complete.
Set of Six PURIFIERS, 9 ft. by 6 ft., and 3 ft. 6 in. deep, with Trays and two Centre Valves complete. Two Columns, two Guides, and frame belonging thereto.
One SCRUBBER, 8 ft. by 7 ft., with Iron Trays, Centre Table, and other necessary connections.
One 8-in. GOVERNOR, and also a quantity of piping and other miscellaneous articles.
The above are to be disposed of in consequence of recent extension and enlargement of the works.
Tenders to be sent addressed to the Secretary, and the Directors do not pledge themselves to accept the lowest or any tender
For further particulars apply to Mr. John Perry, Manager, or to
W. H. DAVIES, Solicitor, Secretary.

THE Coatbridge Gas Company have the following PLANT FOR SALE, the whole of which is in thorough good working order, and is brought into the market in consequence of new works having been erected on a larger scale:—

24	D-shaped Mouthpieces	1 ft. 10 in. by 1 ft.				
4	,, ,,	1	8	1	1 in.	
4	,, ,,	1	8	1	1 with side Branches.	
4	,, ,,	1	5 in. by 1 ft.			
4 Round	,,	1	2	diameter.		

All with Connections complete.
108 ft. cast-iron Hydraulic Main 1 ft. 10 in. by 1 ft. 8 in.
1 Tar Chest, 16 ft. by 3 ft. by 3 ft.
1 Battery Condenser, 16 ft. 6 in. by 7 ft. by 2 ft.
1 Washer, 6 ft. by 3 ft. by 2 ft. 6 in. and 3 ft. by 3 ft. by 8 ft.
Exhauster, by Whimster, 9 in. Connections, with Bye-pass.
Engine of 6-horse power and Pumps combined.
Four Purifiers 8 ft. by 12 ft., with 3 sets cast-iron Sieves and Valves complete.
Station-Meter, 6000 ft. per hour, by Milne.
One 9 in. Governor, by Peebles.
One Gasholder, 70 ft. by 20 ft.
One ,, 40 12
For further particulars apply to Mr. ROBERT MITCHELL, Manager, Gas-Works, Coatbridge,
Feb. 12, 1879.

GAS COALS.

THE Directors of the Canterbury Gas and Water Company invite TENDERS for the supply of 7000 Tons of GAS COALS, of either of the following description, viz.:—Pelton Main, Pelaw Main, Holmside, Dean's Primrose, Ravensworth Pelaw—to be delivered as follows:—

March,	1879	300 tons.
April	,,	500 ,,
May	,,	500 ,,
June	,,	800 ,,
July	,,	800 ,,
August	,,	800 ,,
October	,,	600 ,,
November	,,	800 ,,
December	,,	800 ,,
January,	1880	600 ,,
February	,,	500 ,,

Persons tendering must state the description of Coals offered, and a price per ton, either free on board ships to be provided by the Company, or delivered at the Contractor's sole expense into the Company's Stores at Canterbury; the weight in the latter case to be ascertained on the Company's weigh-bridge, and paid for accordingly.
Sealed tenders, endorsed "Tender for Gas Coals," to be addressed to me, and delivered at the Company's Offices, Castle Street, Canterbury, before Ten o'clock a.m. on Friday, the 28th of February inst.
The Directors do not bind themselves to accept the lowest or any tender. By order,
Canterbury, Feb. 14, 1879. JAMES BURCH, Secretary.

TO INVENTORS AND PATENTEES.

MR. W. H. BENNETT, having had considerable experience in matters connected with Gas, Water, and Sanitary Improvement, begs to say that he continues to assist Inventors in the perfection of their designs, and to obtain for them PROVISIONAL PROTECTION, whereby their invention may be secured for Six Months; or LETTERS PATENT, which are granted for Fourteen Years.
Patents completed, or proceeded with at any stage, thereby rendering it unnecessary for persons resident in the country to visit London.
Patents procured for Foreign Countries.
Information as to cost, &c., supplied gratuitously upon application to the Advertiser, 22, Great George Street, WESTMINSTER.

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WILL BE SENT POST FREE ON APPLICATION

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STOURBRIDGE.

BRAY'S
NEW BURNER,
80-Candle Power.

See Page 253.

TO GAS ENGINEERS.

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Beg to call the attention of Gas Engineers to the fact that the novel and original feature in connection with PEEBLES' SYSTEM OF CONTROLLING THE ACTION OF GAS GOVERNORS is the loading or acting on the Bell by Pneumatic Pressure instead of Weights.

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Public Accountant,
MOORGATE STREET CHAMBERS,
GREAT SWAN ALLEY,
MOORGATE STREET, E.C.

Mr. ROBERT DEMPSTER,
CONSULTING GAS ENGINEER,
ELLAND, near HALIFAX,

May be consulted on all matters connected with Valuations, Arbitrations, and Parliamentary Applications connected with Gas-Works. Having been engaged on extensive Arbitration Cases, which, combined with his experience in Construction and Contracting, his knowledge of Engineering and Valuations is both extensive and reliable.

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SPECIAL ACCOUNTANT FOR GAS COMPANIES,
30, GRACECHURCH STREET, LONDON.

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Water Companies Accounts also prepared and adjusted.
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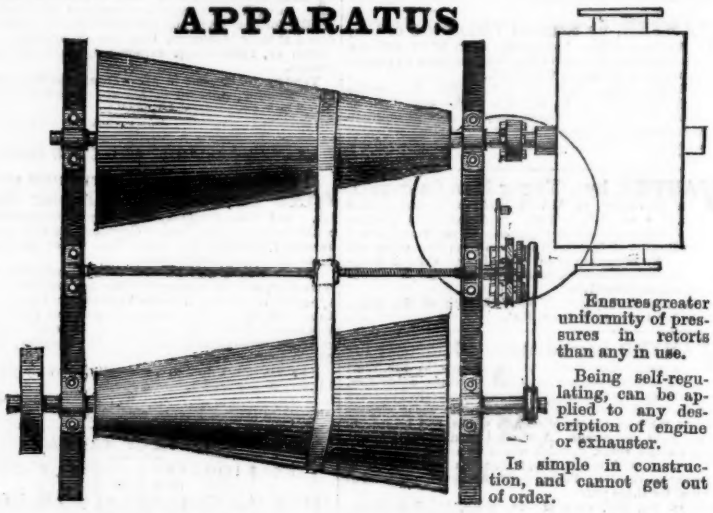

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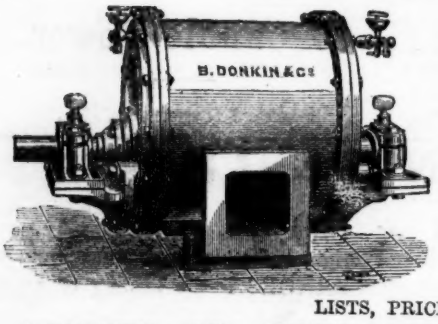

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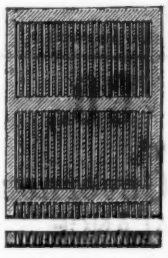

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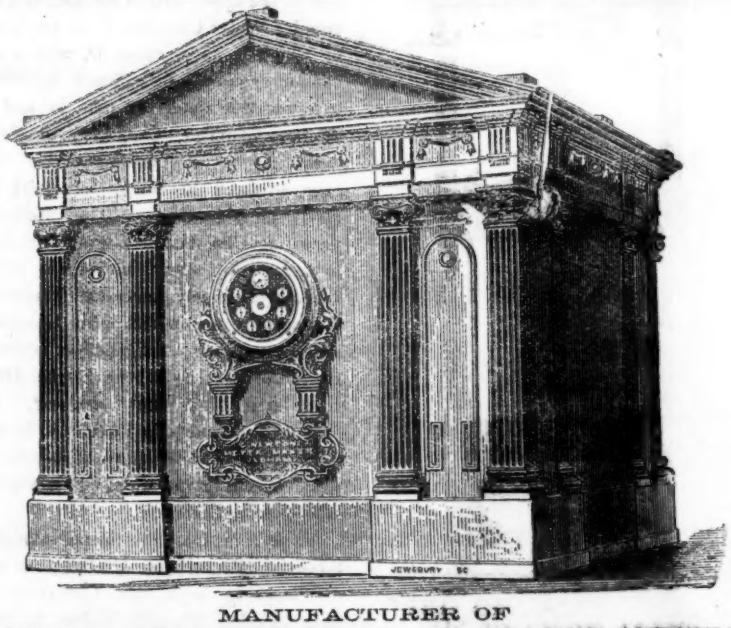

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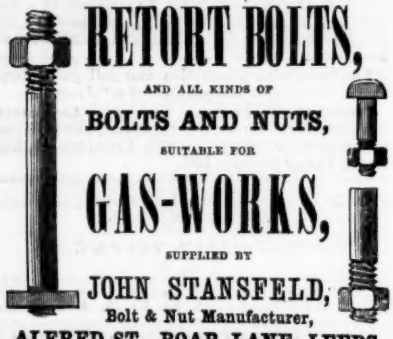

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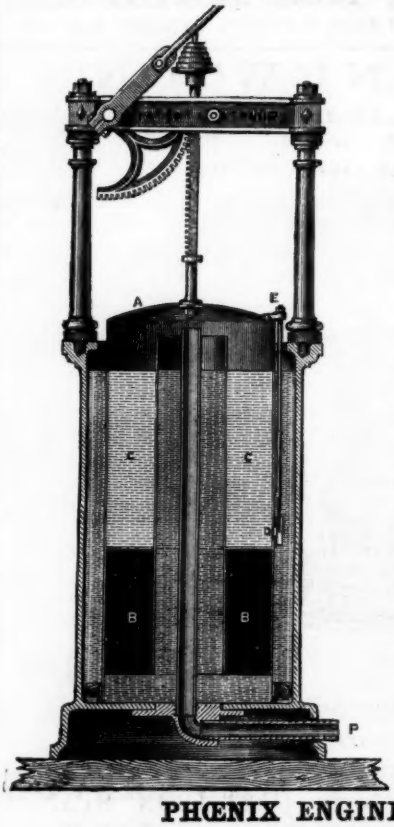

DESCRIPTION OF THE APPARATUS.

The illustration represents a section of the Patent Governor. The lower part of the Bell A is fitted with a loose Float B, and in the upper part of the Bell is a deep annular Water Chamber C, at the bottom of which is an opening D, with a slide outside regulated by a Screw Spindle E, to allow the water to pass in and out of the Chamber C quickly or slowly, according to circumstances, but when once adjusted the slide does **not require altering.** This Self-compensating Chamber gives great steadiness to the up and down movement of the Bell and effectively prevents the "hunting" motion so common with other Governors, thereby ensuring a more perfect action on the throttle-valve of the Engine **than attained by any other.** The sketch shows the clip lever fixed to work on throttle-valve at an angle, and can work in either direction. P is the Gas Inlet-pipe to Governor.

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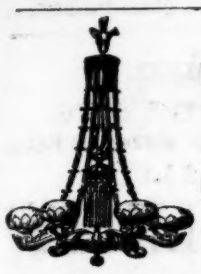

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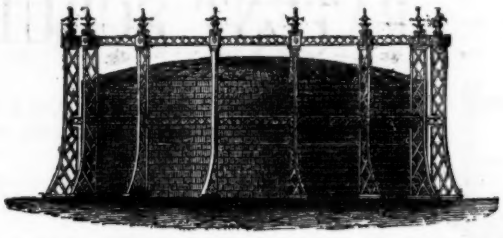

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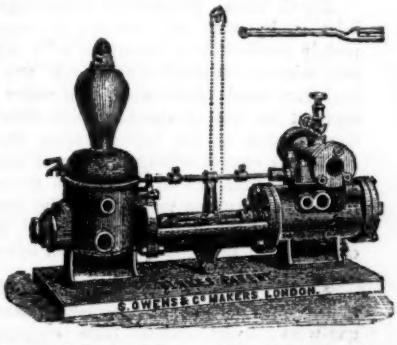

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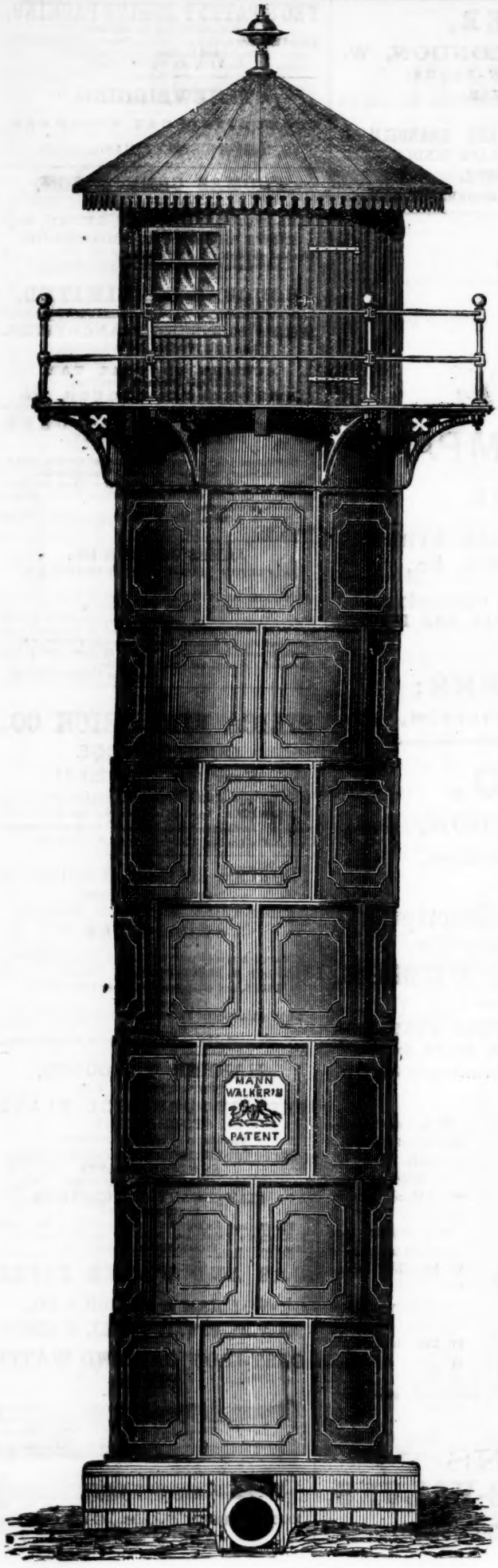
Prices on application.



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MANN & WALKERS' PATENT SCRUBBER.

By Letters Patent in Great Britain, Europe, and the United States of America.

By some important improvements recently patented, the purifying power of these Scrubbers has been much increased, and a stronger ammoniacal solution obtained, which is found to absorb a large portion of the carbonic acid contained in gas, effecting an important saving in money and labour in the lime purifiers, and where oxide only is used, the increase in the illuminating power of the gas obtained by these Scrubbers is shown in a remarkable degree, in consequence of the large quantity of carbonic acid removed from the gas.

It is to be particularly noted that the important results of these Scrubbers do not depend upon the machinery alone. The entire internal construction of the Scrubber bears an almost equally important part. For this reason, where it is desirable to convert existing Scrubbers, whose dimensions happen to be suitable, the work commences by ripping out the whole of the interior of the shell, and beginning the internal construction *de novo* from bottom to top.

Fifty million cubic feet of gas per 24 hours are purified from ammonia by these Patent Scrubbers in a winter's day in the gas-works of London, where the purity of gas supply is the highest in the world, under the chemical restrictions of the Board of Trade.

Generally, wherever a high standard of purification is maintained in the chief cities and towns of the British Provinces and of Europe, these Scrubbers have become established.

By their use the department of purification from ammonia upon a gas-works is made complete, without the aid of prepared oxide of iron, chemicals in purifiers, or any other supplementary process, and the whole ammoniacal residual product contained in the coal is absorbed and obtained in the form most profitable to a gas company, while the requirements of all Acts of Parliament and of the Board of Trade, relating to incorporate gas companies, are satisfied.

Foul Gas, properly condensed, entering the inlet is, by once only passing through the Scrubber, completely purified from ammonia with regular certainty day by day, without any further trouble, or any other process, effected by a very small quantity of clear water let into the machinery room at the top of the Scrubber, which is discharged at the liquor outlet at the bottom, from Newcastle coal at about 18 to 20 ounces strength, from Yorkshire and other coals, generally from 25 to 30 ounces strength; while acidulated litmus or turmeric exposed at the Scrubber outlet will not show the slightest discoloration, and there is not a quarter of a grain of ammonia per 100 feet left unabsorbed.

They contain their own engine power, requiring only a small inappreciable quantity of steam from the gas-works boiler, and are then complete in themselves, ready for service.

Applications relating to dimensions and prices should be addressed to us, C. AND W. WALKER, 8, FINSBURY CIRCUS, LONDON, E.C., or to Mr. WILLIAM MANN, late Superintendent of the Chartered Gas-Works, BLACKFRIARS, LONDON; they should state approximately the largest make of gas in 24 hours on a winter's day, and the smallest make on a summer's day, to be purified.

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In consequence of the demand for Burners of extra Power for Lighting Large Spaces, we have introduced Burners of SIXTY and EIGHTY-Candle Power, which give from FIFTEEN to TWENTY per Cent. more Light per cubic foot of Gas consumed than any Flat-Flame Burner hitherto introduced.

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Yields 14,920 cubic feet of 40·92-candle gas per ton.

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12,530 cubic feet of 40·22-candle gas per ton, and 9 cwts. of good coke.

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Yields 12,500 cubic feet of 34-candle gas per ton, and 9 cwts. of excellent coke, containing only 4 per cent. of ash.

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Yields 13,320 cubic feet of 32·5-candle gas per ton.

Prices and full analyses on application at above address, or from WEDDERSPOON, FERGUSSON AND CO., 21, Lime Street, LONDON, E.C.

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POPE & PEARSON, LIMITED, have now the authority of several of the most eminent Gas Engineers of London in stating that their Coal yields *in practical working over* 10,000 *cubic feet of gas, with an illuminating power of* 16 *candles;* or by the standard burners now used by the London Gas Companies, an illuminating power equal to 17½ candles.

One ton yields 12½ cwt. of good coke. This Coal can be shipped from Hull, Goole, Liverpool, Morecambe, and Barrow.

For further particulars, apply to POPE AND PEARSON, LIMITED, West Riding and Silkstone Collieries, near LEEDS.

HEBBURN MAIN GAS COALS.

T. Stone, Esq., of Weymouth, writes on Nov. 17, 1876: "I have used about 12,000 tons of this Coal, with, I think, the best possible results, although not always under the most favourable circumstances. My Coal account made up to Midsummer last showed a makeage of 10,524 cubic feet per ton of 14½-candle gas, and not a hundredweight of Cannel used. This statement would, I know, be incredible to many men, and may provoke the remark, 'How much of it is paid for?' For the gratification of such, I have to say that, of the above quantity, 9866 cubic feet per ton of Coal carbonized were brought to charge and duly paid for, with the exception of about 6s. per cent. for bad debts. The coke is of excellent quality. The above facts I hold to be a greater recommendation to your Coal than any words of mine could be."

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South Metropolitan Gaslight and Coke Company,
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At the request of Mr. Hedley, the owner of the Holmside Colliery, I have much pleasure in stating that, for about ten or twelve years past, this Company has taken at least half of its supply of Newcastle Coal from him. I can, therefore, confidently bear testimony to the good quality of the Holmside Coals, and consider they are equal to the best of the Newcastle Coals, in proof of which I may state that this year we are using those Coals exclusively, that the yield of Gas is from 9700 to 9800 feet per ton, and that the quality of the Gas, without any admixture of Cannel, is over 16 candles, as tested by the officer appointed by the Metropolitan Board of Works, using the London Gas Referees test.

The Coke is of excellent quality, and in quantity amounts to about 40 bushels from a ton of Coal.

The annual consumption of Coal amounts to about 75,000 tons.

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P.S.—I am at this date, Feb. 15, 1875, still using Holmside Coals as largely as ever, and am quite as well pleased with them as when I gave the above certificate.

GEORGE LIVESEY.

We are this year, 1878, using 80,000 tons of Holmside Coal. GEORGE LIVESEY.

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Analyses and Quotations on application.

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FUEL-MACHINE, for Compressing Breeze and Tar.

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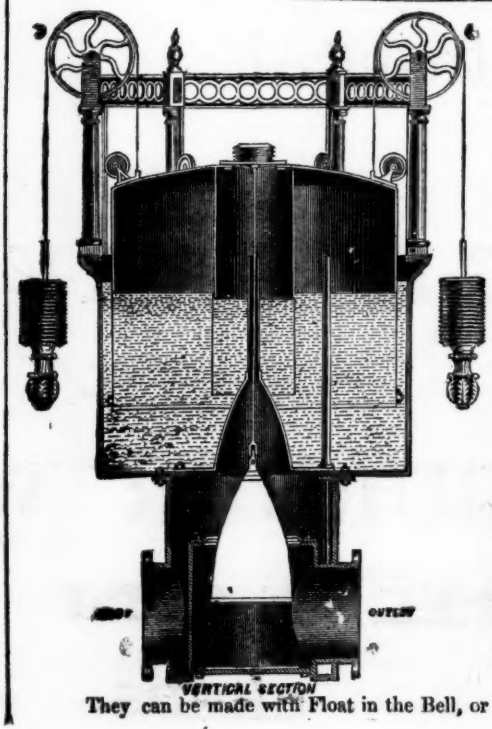
Beg to submit to Gas Engineers their

PATENT COMPENSATING GAS GOVERNOR,

Which is designed to give an uniform pressure at the Outlet to the Main at all draughts up to the full quantities which the Governors are made to control, such outlet pressure being less than the initial pressure.



VERTICAL SECTION

The uniformity of pressure is obtained by introducing a compensating chamber into the Bell or Holder of the Governor, which compensator is of the same area as the valve, both of which are operated on by the initial pressure, thereby placing the valve in equilibrium, no matter what the initial pressure may be. The action on the Bell is by the Gas passing along a pipe from the outlet, and the pressure is regulated by weights in connexion with the Bell as required.

From the sectional elevation attached hereto, it will be seen that only the Gas required to operate the Bell comes in contact with the water of the tank, which water will remain comparatively sweet and free from odour. That in case of accident to the Bell, no more Gas can escape than would pass up the pipe covering the valve-rod and Bell supply-pipe.

These Governors have been made and sent out of various sizes for from 2 to 24-inch Mains, and give most satisfactory results.

They can be made with Float in the Bell, or counterpoise as per section.

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JAMES PATERSON Esq., Gas Engineer, of the Warrington Gas Company, reported, Aug. 10, 1875:—

"This Coal possesses remarkable qualities as a gas and coking coal, and appears SECOND TO NONE IN THE KINGDOM. It contains the large quantity of 699 lbs. of illuminating matter, and 1498 lbs. of coke to the ton, and produces **12,240** cubic feet of 16·66 candle gas."

The above Company are raising nearly a thousand tons of the Real Old Silkstone Gas Coal per working day.

PRICES QUOTED TO ANY RAILWAY STATION, OR F.O.B. HULL, GRIMSBY, GOOLE, KEADBY, LIVERPOOL, AND FLEETWOOD.

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RETORTS AND FIRE-BRICKS,

Being the Highest Honour given for this class.

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SCRUBBERS, VALVES, EXHAUSTERS, IRON ROOFS, BRIDGES, BOILERS, AND GENERAL CAST AND WROUGHT IRON WORKS.

S. C. & SONS undertake the entire erection of New, or Remodelling of existing Gas-Works in any part of the World, including small Works for MANSIONS, FACTORIES, &c., or Works of the largest extent (are now constructing the largest Gasholder yet erected); also the supplying and laying of MAINS.

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The various descriptions of Gas Coal produced from the above Collieries possess an unequalled reputation, combining in a large degree the constituents essential for the production of the best quality of Coke and Gas of a high illuminating power.

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JAS. PATERSON, Esq., of Warrington, after testing various qualities of our Coal, has sent the following testimony of their merits:—

"*Warrington Gaslight and Coke Company,*
Offices, Mersey Street, Warrington, April 23, 1877.

"MESSRS. NEWTON, CHAMBERS, AND CO.,

"GENTLEMEN,—After carefully testing the various samples of Gas Coals sent from your Collieries for analysis, I have pleasure in reporting them as belonging to the highest class of Gas and Coking Coals.

"The average of Nine samples gives a yield of **12,500** cubic feet of **15½**-Candle Gas, being equivalent to **664** lbs. of sperm per ton, and **1420** lbs. of fixed carbon of a very superior quality. All the samples bear a close relation to each other in value.

"Yours truly, "JAMES PATERSON."

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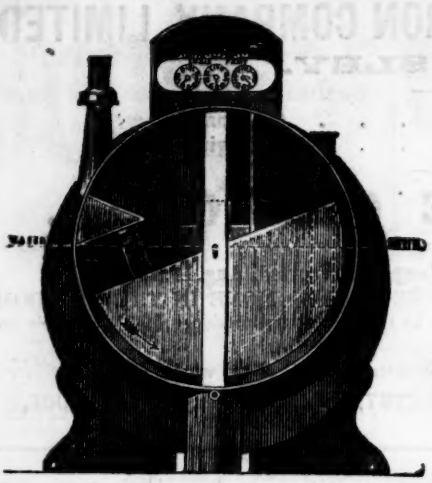

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Over 120,000 in action.

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METERS, BOXES, REGULATORS, AND ALL REQUISITES FOR PUBLIC LIGHTING.

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THE UNVARYING WATER-LINE GAS-METERS,

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Sixteen recently erected at Beckton, applied to Covers 30 feet square.

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